A.A.I. DEMOLITION
ASBESTOS REMOVAL

RECORD OF RESPIRATOR FIT TEST

This is to certify that qualitative fit test was performed for Joe Spurgeon on 7-06-07 in accordance with OSHA 29 CFR 1926.58 APPENDIX C, Qualitative and Quantitative Fit Testing Procedures. The test was performed by Korry Holden using the Irritant Fume Protocol.

Respirator Selected:

Manufacture: North
Model: ½ - face
Size: Medium

Employee Signature 

AAI
P.O. Box 2593 / Boise, Idaho 83701 / Phone (208) 345-3574 / FAX (208) 343-1538

SAINT ALPHONSUS
MEDICAL GROUP

Occupational Medicine - SAMG
6533 Emerald Boise, ID 83704
(208) 367-4197

MEDICAL EXAMINATION REPORT

Name: Spurgeon, Joe Date: 2 22 08

Employer: Asbestos Abatement

Job for which person examined: Laborer

Based on history, physical and laboratory data, the above named person is found to be:

✓: Physically qualified for the job.

_____: Physically qualified for the job with the following limitations:

_____: Prior to heavy lifting, a back conditioning program is recommended.

_____: Lifting should be limited to _____ pounds.

_____: Hearing protection should be worn in high noise level areas.

_____: Other _____

_____

_____: Medical Hold.

_____: Not physically qualified for the job.

✓: Medically qualified for respirator use.

_____: Medically qualified for respirator use with the following limitations:

_____

_____

_____: Not medically qualified for respirator use.

___ Michael P. Gibson, M.D. ✓ Jacob W. Kammer, M.D. ___ _____

Certificate of Completion

Joe A. Spurgeon

Has completed the Oregon Supervisor Refresher Asbestos Course, Vale, OR, has passed the exam and satisfied all the AHERA, ASHARA, and TSCA/Title II requirements on July 06, 2007.

Asbestos Training Project
Workplace Resources, Inc.
1908 SE Pershing St, Portland, OR 97202
(503) 233-7707

Edwin E. Edinger, Manager

Expire Date: July 6, 2008

Certification No.: (b) (6)

A.A.I. DEMOLITION
ASBESTOS REMOVAL

INC

RECORD OF RESPIRATOR FIT TEST

This is to certify that qualitative fit test was performed for Kevin Moser on 7-06-07 in accordance with OSHA 29 CFR 1926.58 APPENDIX C, Qualitative and Quantitative Fit Testing Procedures. The test was performed by Korry Holden using the Irritant Fume Protocol.

Respirator Selected:

Manufacture: North
Model: ½ - face
Size: Medium

Employee Signature Kevin Moser

AAI
P.O. Box 2593 / Boise, Idaho 83701 / Phone (208) 345-3574 / FAX (208) 343-1538

SAINT ALPHONSUS
MEDICAL GROUP

Occupational Medicine - SAMG
6533 Emerald Boise, ID 83704
(208) 367-4197

MEDICAL EXAMINATION REPORT

Name: Kevin Moser Date: 10/26/07

Employer: Asbestos Abatement

Job for which person examined: Annual Asbestos Abatement

Based on history, physical and laboratory data, the above named person is found to be:

✓: Physically qualified for the job.

_____: Physically qualified for the job with the following limitations:

_____: Prior to heavy lifting, a back conditioning program is recommended.

_____: Lifting should be limited to _____ pounds.

_____: Hearing protection should be worn in high noise level areas.

_____: Other _____

_____

_____: Medical Hold.

_____: Not physically qualified for the job.

✓: Medically qualified for respirator use.

_____: Medically qualified for respirator use with the following limitations:

_____

_____

_____: Not medically qualified for respirator use.

_____

___ Michael P. Gibson, M.D. ✓ Jacob W. Kammer, M.D. ___ _____

Certificate of Completion

Kevin Moser

Has completed the Oregon Supervisor Refresher Asbestos Course, Vale, OR, has passed the exam and satisfied all the AHERA, ASHARA, and TSCA/Title II requirements on July 06, 2007.

Asbestos Training Project
Workplace Resources, Inc.
1908 SE Pershing St, Portland, OR 97202
(503) 233-7707

Edwin E. Edinger, Manager

Expire Date: July 6, 2008

Certification No.: (b) (6)

APPENDIX 5

Conclusion

The XRD results for samples 07464300 and 07464310 are generally consistent with the results of analysis by optical microscopy previously reported greater than 1% asbestos content in both of these samples.[2] XRD analysis confirmed the presence of clinochrysotile (chrysotile) and riebeckite (crocidolite) in total concentration greater than 1% by weight in samples 07464300 and 07464310.

References

1 ICDD, 2002, Powder Diffraction file, release 2002: Newton Square, Pennsylvania, International Centre for Diffraction Data, cd-rom.

2 Case Narrative for asbestos analysis by stereomicroscopy and polarized light microscopy for samples from the Mountain Home AFB Asbestos Project, memorandum to Michelle Wright from Jed Januch, March 3, 2008.

Figure 2 – Consolidated x-ray diffraction patterns for sample 07464300

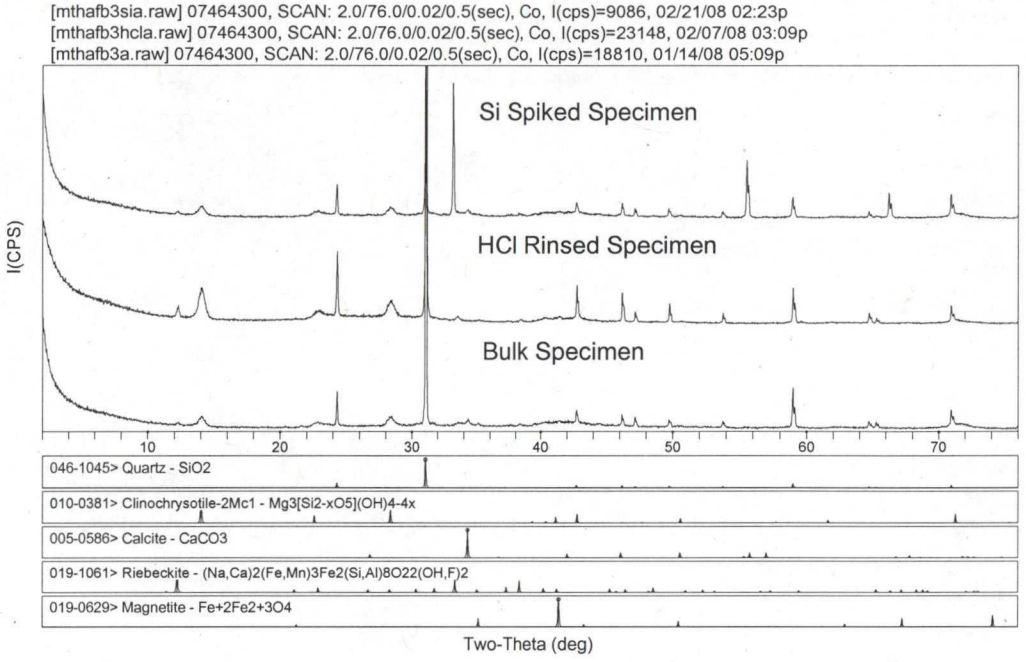


Figure 3 – Consolidated x-ray diffraction patterns for sample 07464310

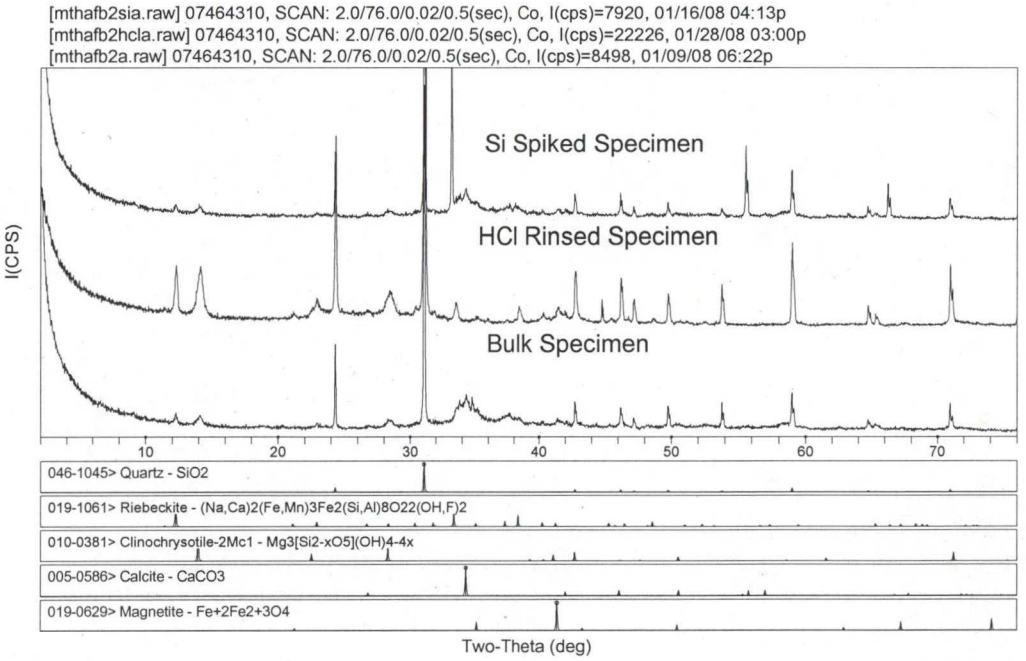


Table 1 – Minerals identified by x-ray diffraction analysis samples 07464300 and 07464310

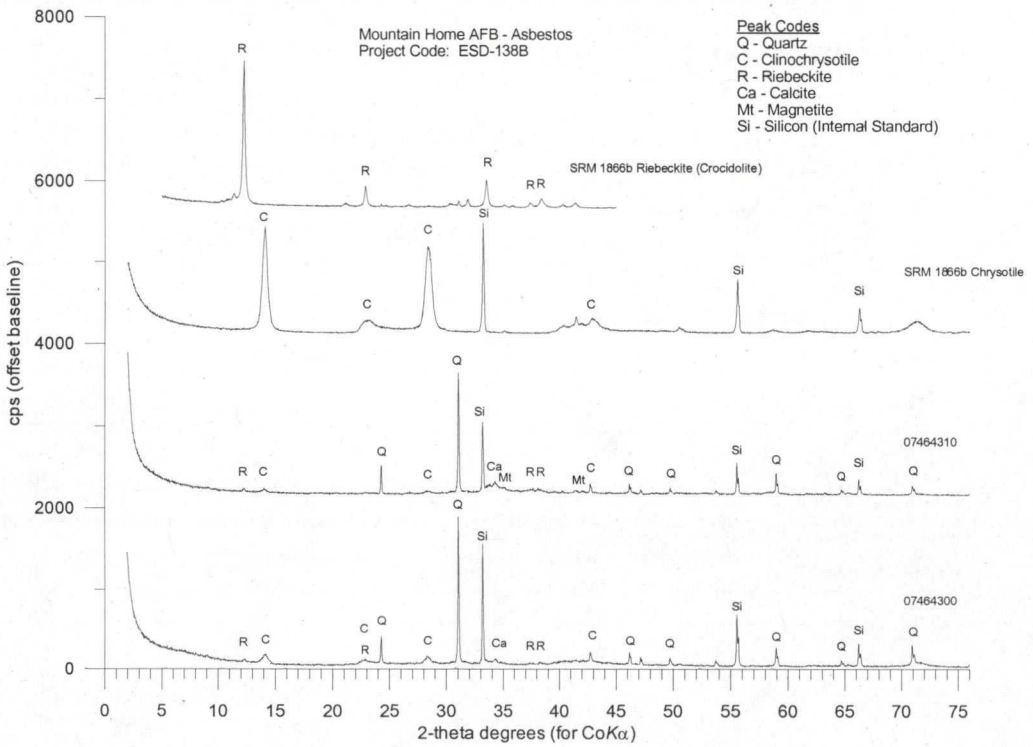
Mountain Home AFB - Asbestos
Project Code ESD-138B

Silicon (NIST SRM 640) was added to both of these specimens as an internal standard for determining abundance.

PHASE	IDEAL FORMULA	07464300	07464310
SHEET SILICATES			
Serpentine			
Clinochrysotile	$Mg_3Si_4O_5(OH)_4$	Minor	Trace
FRAMEWORK SILICATES			
Quartz	SiO_2	Minor	Minor
CHAIN SILICATES			
Amphibole			
Riebeckite	$Na_2\ Fe_3^{2+}\ Fe_2^{3+}[Si_8O_{22}](OH)_2$	Trace	Trace
CARBONATES			
Calcite	$CaCO_3$	Trace	Minor
OXIDES			
Magnetite	Fe_3O_4	ND	Trace
ELEMENTS			
Silicon SRM 640	Si	Trace	Trace
AMORPHOUS	Various	Major	Major

NOTES
ND=Not Detected
Qualitative abundance designated by Major (>20%) Minor (5%-20%) and Trace (<5%)

Figure 1 – X-ray diffraction patterns for samples 07464300 and 07464310



kilovolts (kV). Focusing slit configurations included a 2 millimeter (mm) divergence slit and a 0.3 mm receiving slit. Patterns were recorded at scan speeds of 0.5-15 degrees of two-theta ($^{o}2\theta$) units per minute over a 2-76 degree range.

Diffraction data collection software for this project was DMSNT (version 1.37, Scintag, Inc.) and the pattern evaluation software was JADE (version 8.5, Materials Data Inc.). The mineral phase identification was made by comparison with the Powder Diffraction File (PDF) maintained by the International Centre for Diffraction Data (ICDD, 2002).[1]

The approximate abundance of each phase was calculated using the 'Easy Quant' feature of the JADE software. The results are qualitatively reported as major, minor, or trace amounts based on the intensity of diagnostic diffraction peaks and consideration of X-ray absorption characteristics. Corresponding numerical values are approximately greater than 20% by weight for major, 5-20% for minor, and less than 5% for trace amounts. The detection limit for XRD analysis is typically 1-5% although the 'Easy Quant' feature of JADE reported values as low as 0.7 wt%. Quality control checks for the XRD analysis include the following:

1. The diffractometer's goniometer alignment was verified with SRM 1976, a flat plate of sintered alumina (corundum) provided by the National Institute of Standards and Technology (NIST) at the start (1/9/08) and at the end (2/27/08) of the project.

2. At the beginning of each day of data collection, the alignment of the goniometer and stability of the X-ray intensity was checked by measuring the position and peak height of the 3.343 Å (101) peak of a novaculite (fine-grained quartz) reference plate.

3. The 3.343 Å peak of quartz was present in the samples and provided an internal reference for evaluation of sample displacement error.

Results

Sample 07464300 contained a minor concentration of clinochrysotile (chrysotile) and a trace of riebeckite (crocidolite). It also contained a minor concentration of quartz, a trace of calcite and a major concentration of amorphous material. Sample 07464310 contained traces of clinochrysotile and riebeckite. It also contained minor concentrations of quartz and calcite, a trace of magnetite, and a major concentration of amorphous material. A trace concentration of silicon was detected in both samples because less than 5% silicon was added to each.

Table 1 lists the results of the X-ray diffraction analysis of the silicon spiked samples used for estimating abundance of the phases identified. The diffraction patterns for samples 07464300 and 07464310 compared with patterns for specimens of clinochrysotile and riebeckite from SRM 1866b are displayed in Figure 1. Images of consolidated patterns for the bulk specimens, the HCl rinsed specimens, and the silicon spiked specimens are displayed in Figure 2 for sample 07464300 and Figure 3 for sample 07464310.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
PortOrchard, Washington 98366

March 21, 2008

MEMORANDUM

SUBJECT: Narrative for X-ray diffraction analysis of two samples from the Mountain Home AFB Asbestos Project

Project Code: ESD-138B
Account Code: 0708B10P501E50C

FROM: Jed Januch, Senior Investigator
Office of Environmental Assessment
Environmental Services Unit

TO: Michelle Wright, Asbestos NESHAP Coordinator
Office of Enforcement and Compliance
Air and RCRA Compliance Unit

cc: Ellie Hale, Project Manager
Office of Environmental Cleanup
Site Cleanup Unit 2

Two samples of cement asbestos pipe were submitted for analysis by X-ray diffraction (XRD) on November 19, 2007. The goal of the analysis was to identify the main mineral phases present in the samples and to provide a quality assurance check for asbestos analysis conducted by optical microscopy. XRD measurements were made January 4–February 27, 2008. The samples are identified and described as follows:

EPA Number	Sample Station	GPS Location
07464300	Phase 6 open trench	N 43° 03.364' W 115° 50.664'
07464310	Verlinde Hill Debris Field	N 43° 04.114' W 115° 53.029'

Method

The analysis was conducted by Method XRD-QL for Compound Identification by X-ray Diffraction Analysis (U.S. EPA Manchester Laboratory). Specimens from each of the samples needed to be reduced to a powder prior to XRD analysis. The specimens were prepared by pulverizing each in a McCrone percussion mortar followed by impact grinding in a SPEX 6750 freezer mill cooled by liquid nitrogen. Material from both samples was examined before and after treatment with dilute hydrochloric acid (HCl). The specimens were rinsed in HCl to remove acid soluble components and concentrate the clinochrysotile and riebeckite phases. In addition a specimen of each of the samples was spiked with silicon standard reference material (SRM) 640c, 4.84% by weight for sample 07464300 and 4.95% by weight for sample 07464310, to aid in the estimate of abundance for the phases detected (see Table 3).

A Scintag X1 X-ray diffractometer was used to acquire diffraction data with cobalt (Co) $K\alpha$ radiation at a wavelength of 1.78899 angstroms (Å), generated at 36 milliamps (mA) and 45

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

MEMORANDUM

SUBJECT: Data Release for X-ray Diffraction (XRD) Results from the Region 10 USEPA Laboratory

PROJECT NAME: Mountain Home AFB

PROJECT CODE: ESD-138B

FROM: Gerald Dodo, Acting Laboratory Director
US EPA Region 10 Laboratory
Office of Environmental Assessment

TO: Michele Wright, Asbestos NESHAP Coordinator
Office of Enforcement & Compliance
Air and RCRA Compliance Unit

Ellie Hale, Project Manager
Office of Environmental Cleanup, Site Cleanup Unit 2

J.David Berrett, US DOD
Matt Peltier- USAF

I have authorized release of this data package. Attached you will find the X-ray Diffraction results for the Mountain Home AFB project for the samples collected 11/15 and 11/16/07 . For further information regarding the attached data, contact Jed Januch at 360-871-8731.

Asbestos Determination in Bulk Samples

Project VP0789 Analyst PJ7 PHOTO LOG Page 4 of 4

Date 1-30-08

Sample/ Photo ID	Photo No.	Photo Description/Fiber Identification	Magnification	Optics [1,2,3,4,5]	Date
WP X5	40	chrysotile, human hair	250	1	1-30-08
" X6	41	" "	400	1	1-30-08

1. ⊕ - Cross Polar, 2. ! - Single polar, 3. ! DS – Single polar with dispersion staining, 4. ⊕ RI – Cross polar with "1st order red" plate compensator

Digital 1 = Canon PowerShot A540 Digital Camera
Digital 2 = Q-imaging Microspublisher 3.3

5. Reflected light

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF CRIMINAL ENFORCEMENT, FORENSICS AND TRAINING NATIONAL ENFORCEMENT INVESTIGATIONS CENTER

Asbestos Determination in Bulk Samples

Project UP0789 Analyst PJ7 PHOTO LOG Page 3 of 4

Date 1-30-08

Sample/ Photo ID	Photo No.	Photo Description/Fiber Identification	Magnification	Optics [1,2,3,4,5]	Date
NISTCHR R1	27	NIST certified chrysotile	100	4	1-30-08
McCHR x1	28	McCrone prepared slide, chrysotile		1	
" R1	29	" "		4	
McCro x1	30	McCrone Prepared Slide, crocidolite		1	
" R1	31	" "		4	
NIST Cro x1	32	NIST certified crocidolite		1	
" R1	33	" "		4	
M2 2006#3 x1	34	M2 2006 #3 chrysotile, crocidolite, quartz, perlite		1	
" R1	35	" "		4	
WP x1	36	crocidolite, human hair	100	1	
" x2	37	" "	250	1	
" x3	38	" "	400	1	
" x4	39	chrysotile, human hair	100	1	

1. ⊕ - Cross Polar, 2. ! - Single polar, 3. ! DS – Single polar with dispersion staining, 4. ⊕ RI – Cross polar with "1st order red" plate compensator

Digital 1 = Canon PowerShot A540 Digital Camera
Digital 2 = Q-imaging Microspublisher 3.3

5. Reflected light

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF CRIMINAL ENFORCEMENT, FORENSICS AND TRAINING NATIONAL ENFORCEMENT INVESTIGATIONS CENTER

Asbestos Determination in Bulk Samples

Project VP0789 Analyst DS7 PHOTO LOG Page 2 of 4

Date 1-28-08 / 1-30-08

Sample/ Photo ID	Photo No.	Photo Description/Fiber Identification	Magnification	Optics [1,2,3,4,5]	Date
WP S1 Dup DS 2-11-08	14	crocidolite, pleochroism	100	2	1-28-08
" S2	15	" "		2	
" DS1	16	crocidolite, DS colors 1.680		3	
" DS2	17	" " 1.700		3	
" DS3	18	chrysotile, DS colors 1.550		3	
" DS4	19	" " 1.550		3	1-30-08
" DS5	20	" " 1.550		3	
WP R1 Dup	21	waterpipe, chrysotile, crocidolite		4	
" X1 Dup	22	" "		1	
WP R1 Trip	23	waterpipe, chrysotile, crocidolite		4	
" X1 Trip	24	" "		1	
ACD BLKS1	25	Acid Blank, NIST fiberglass		2 4	
NISTCHR X1	26	NIST certified chrysotile		1	

1. ⊕ - Cross Polar, 2. ! - Single polar, 3. ! DS – Single polar with dispersion staining, 4. ⊕ RI – Cross polar with "1st order red" plate compensator

Digital 1 = Canon PowerShot A540 Digital Camera
Digital 2 = Q-imaging Microspublisher 3.3

5. Reflected light

Asbestos Determination in Bulk Samples

Project UPC739 Analyst PJF PHOTO LOG Page 1 of 4

Date 1-25-08 / 1-28-08

Sample/ Photo ID	Photo No.	Photo Description/Fiber Identification	Magnification	Optics [1,2,3,4,5]	Date
1-25-08 UPC739 1	1	Fed Ex Pak as received	1	5	1-25-08
" 2	2	Inner bag of bubble wrap, with sample inside	1		
" 3	3	Sample and chain of custody	1		
" 4	4	Front of sample bag with custody seals	1		
" 5	5	Back of sample bag with custody seals	1		
1-28-08 UPC739 1	6	Pipe and ruler	1		1-28-08
" 2	7	Pipe and digital caliper, 12.28 mm thick	1		
water pipe next	8	water pipe, 6.3X	6.3		
" 2	9	edge of water pipe, 6.3X	6.3		
WP RI orig	10	water pipe, chrysotile, crocidolite, perlite, quartz	100	4	
" X1	11	" " "		1	
QC1 RI	12	QC-1 chrysotile, crocidolite, cellulose		4	
" X1	13	" "		1	

1. ⊕ - Cross Polar, 2. ! - Single polar, 3. ! DS – Single polar with dispersion staining, 4. ⊕ RI – Cross polar with "1st order red" plate compensator

Digital 1 = Canon PowerShot A540 Digital Camera
Digital 2 = Q-imaging Microspublisher 3.3

5. Reflected light

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF CRIMINAL ENFORCEMENT, FORENSICS AND TRAINING NATIONAL ENFORCEMENT INVESTIGATIONS CENTER

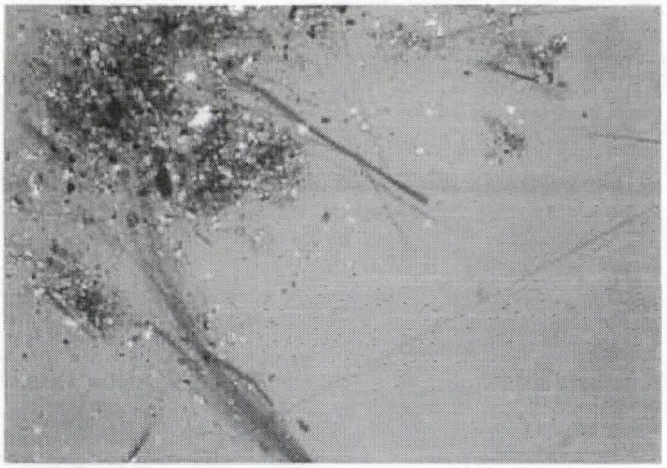


Photo 33 NISTCROR1 VP0789
NIST certified crocidolite

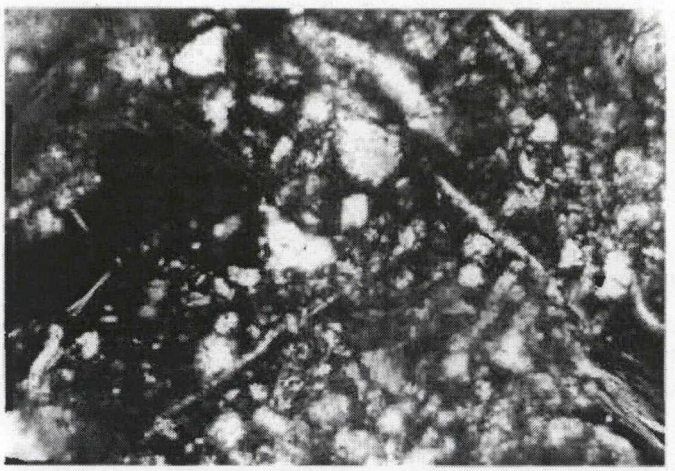


Photo 34 M22006#3X1 VP0789
M2 2006 #3 Chrysotile, crocidolite, quartz, perlite

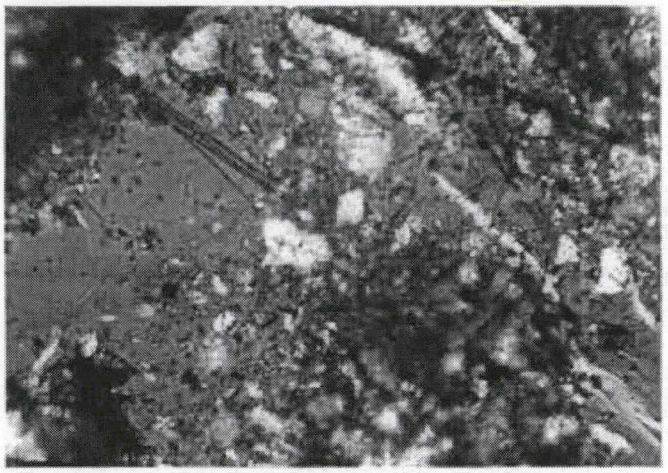


Photo 35 M22006#3R1 VP0789
M2 2006 #3 Chrysotile, crocidolite, quartz,

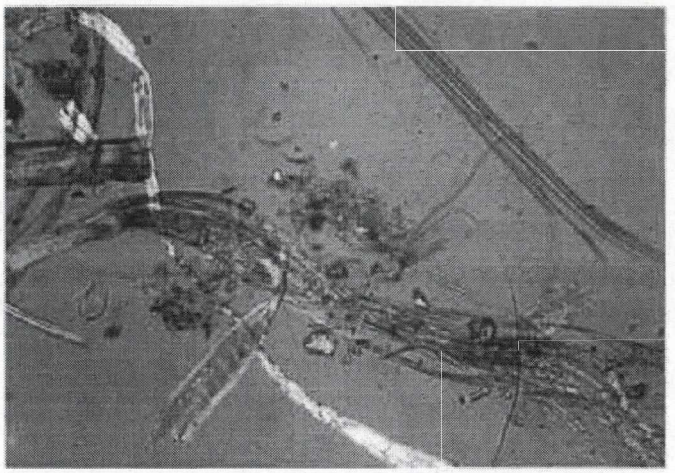


Photo 12 QC1R1 VP0789
QC-1 Chrysotile, crocidolite, cellulose

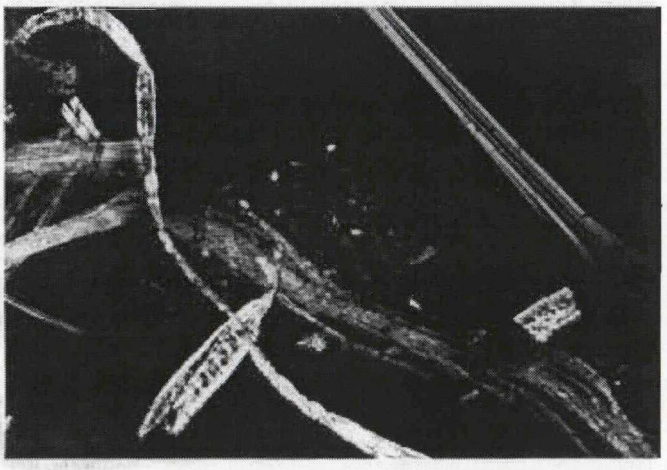


Photo 13 QC1X1 VP0789
QC-1 Chrysotile, crocidolite, cellulose

All photos taken by Peggy Forney
1-25-08 thru 1-30-08

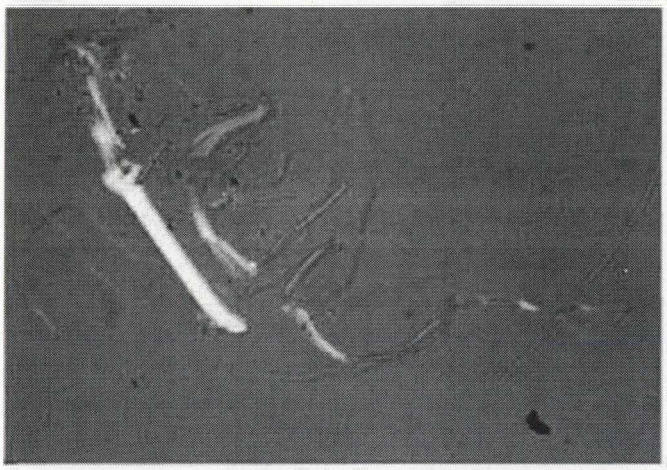


Photo 27 NISTCHRR1 VP0789
NIST certified chrysotile

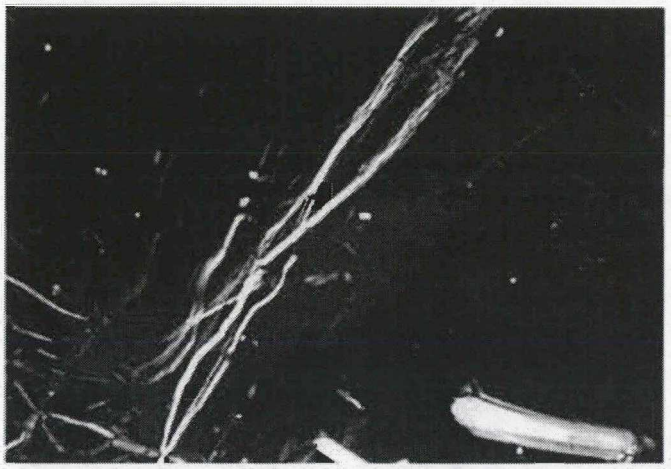


Photo 28 MCCHRX1 VP0789
McCrone prepared slide, chrysotile

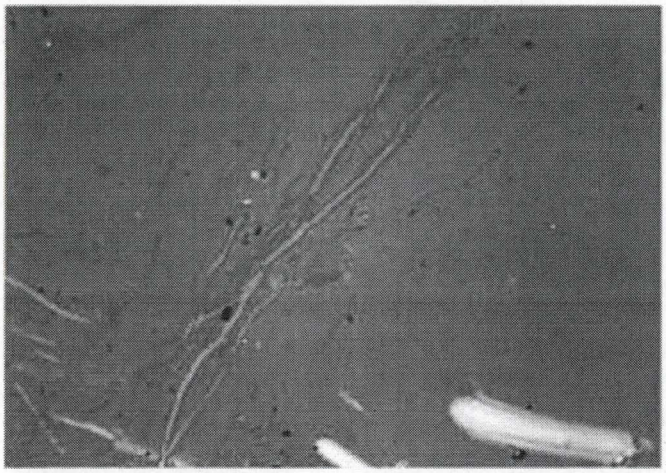


Photo 29 MCCHRR1 VP0789
McCrone prepared slide, chrysotile

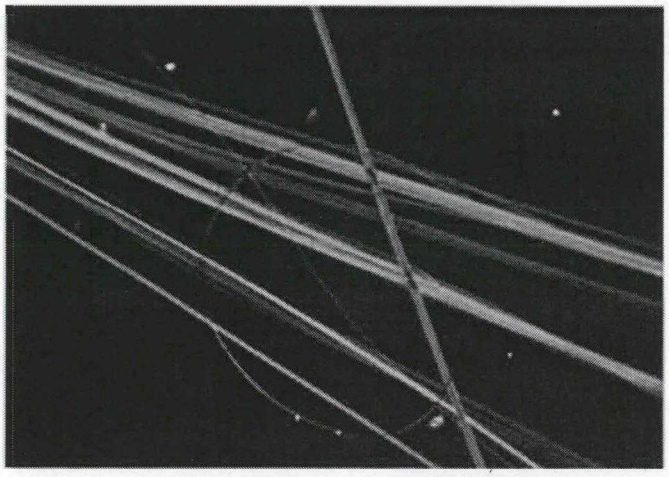


Photo 30 MCCROX1 VP0789
McCrone prepared slide, crocidolite

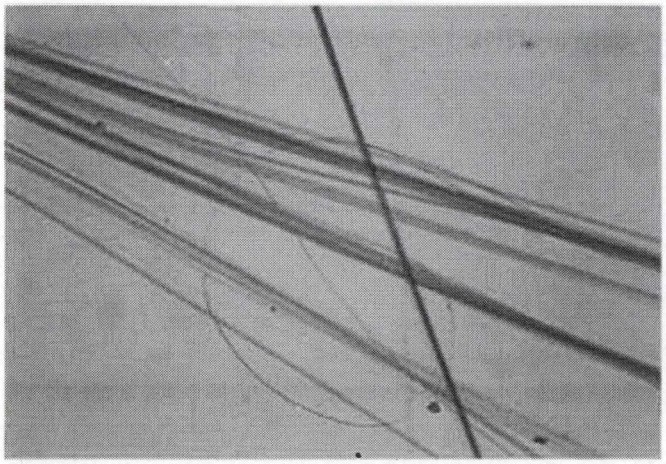


Photo 31 MCCROR1 VP0789
McCrone prepared slide, crocidolite

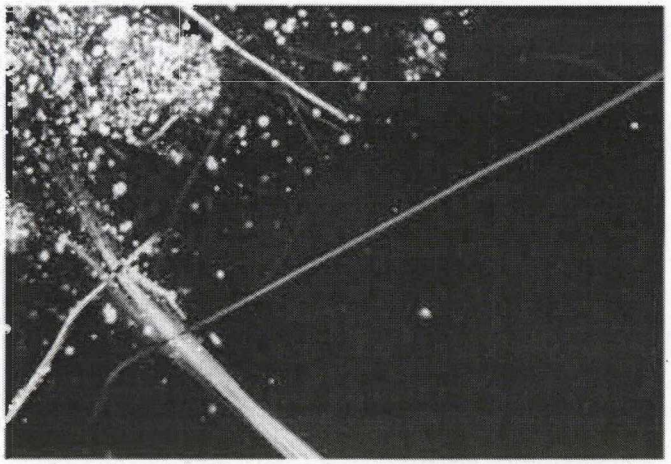


Photo 32 NISTCROX1 VP0789
NIST certified crocidolite

Photo 38 WPX3 VP0789 Waterpipe
Crocidolite compared to human hair, 400X

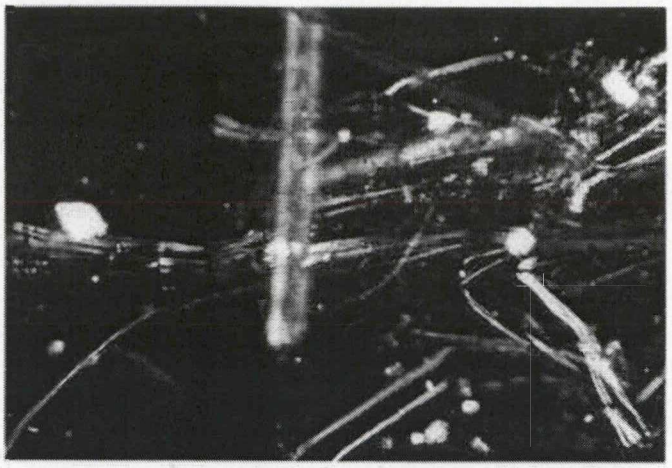


Photo 39 WPX4 VP0789 Waterpipe
Chrysotile compared to human hair, 100X

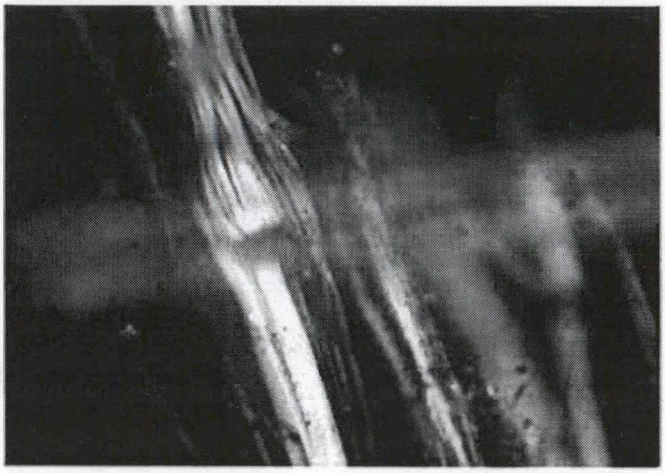


Photo 40 WPX5 VP0789 Waterpipe
Chrysotile compared to human hair, 250X

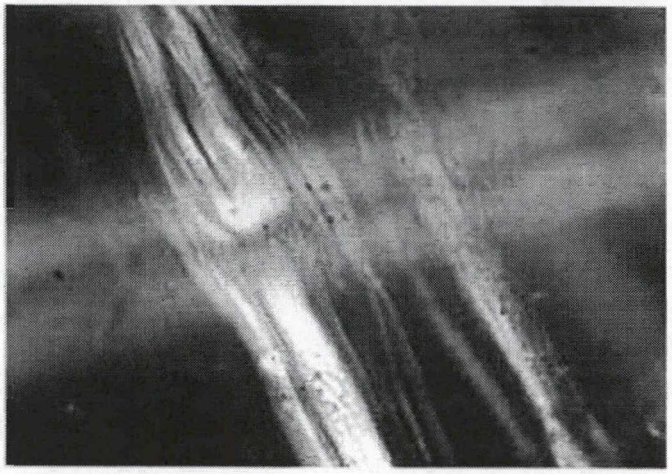


Photo 41 WPX6 VP0789 Waterpipe
Chrysotile compared to human hair, 400X

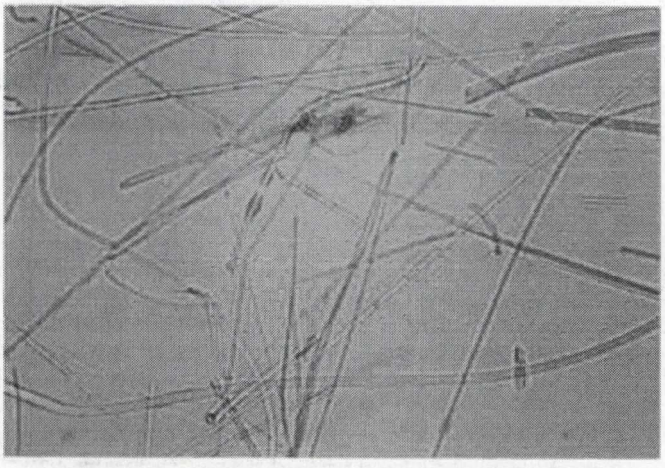


Photo 25 ACDBLKS1 VP0789
Acid Blank, NIST fiberglass

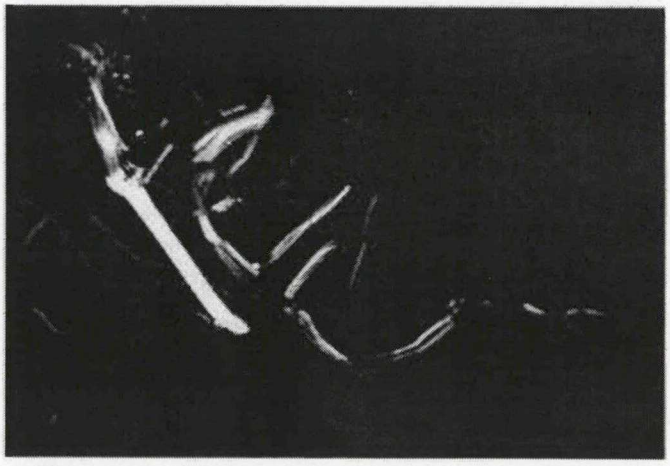


Photo 26 NISTCHRX1 VP0789
NIST certified chrysotile

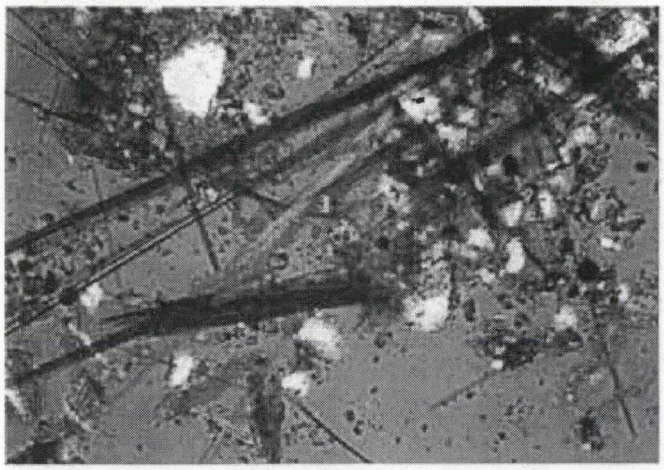


Photo 21 WPR1 dup VP0789
Waterpipe: chrysotile, crocidolite, perlite, quartz

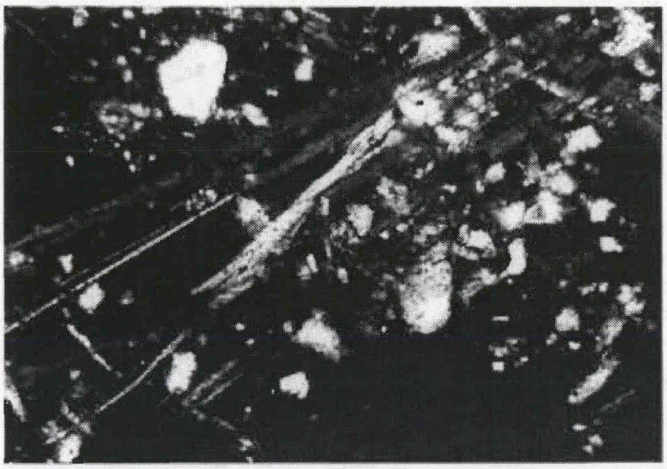


Photo 22 WPX1 dup VP0789
Waterpipe: chrysotile, crocidolite, perlite, quartz

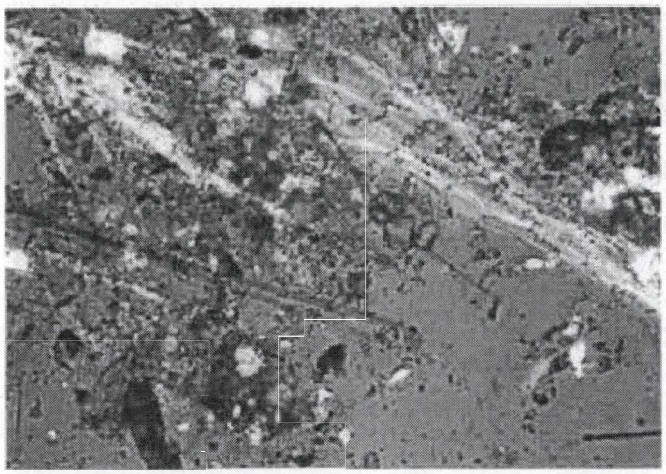


Photo 23 WPR1 trip VP0789
Waterpipe: chrysotile, crocidolite, perlite, quartz

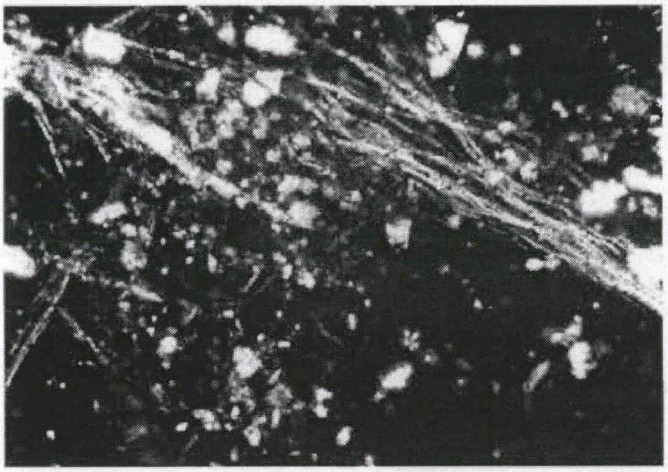


Photo 24 WPX1 trip VP0789
Waterpipe: chrysotile, crocidolite, perlite, quartz

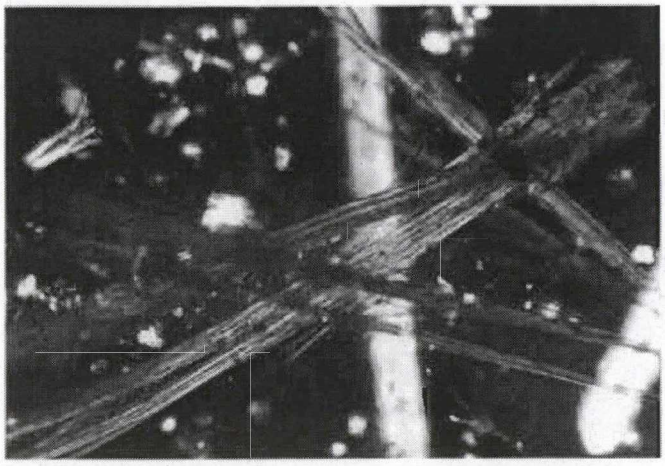


Photo 36 WPX1 VP0789 Waterpipe
Crocidolite compared to human hair, 100X

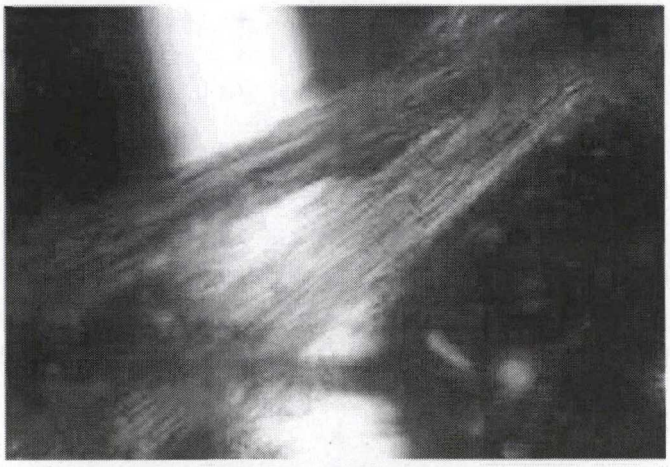


Photo 37 WPX2 VP0789 Waterpipe
Crocidolite compared to human hair, 250X

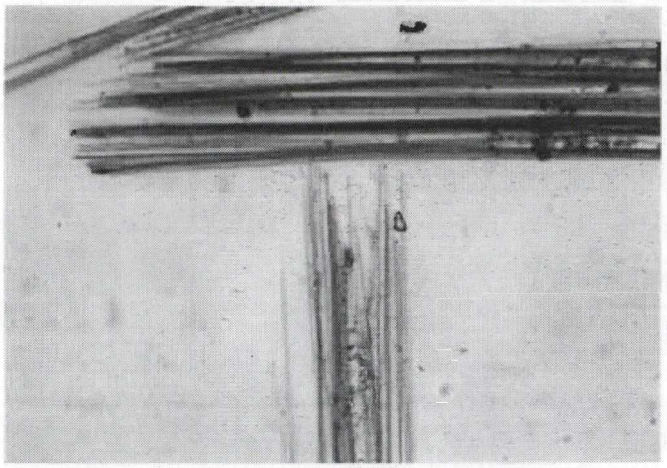


Photo 15 WPS2 VP0789
Waterpipe: crocidolite, pleochroism

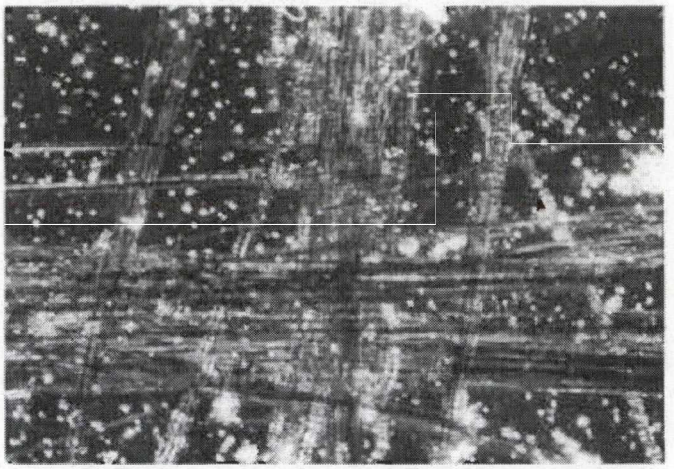


Photo 16 WPDS1 VP0789
Waterpipe: crocidolite, DS colors, RI fluid 1.680

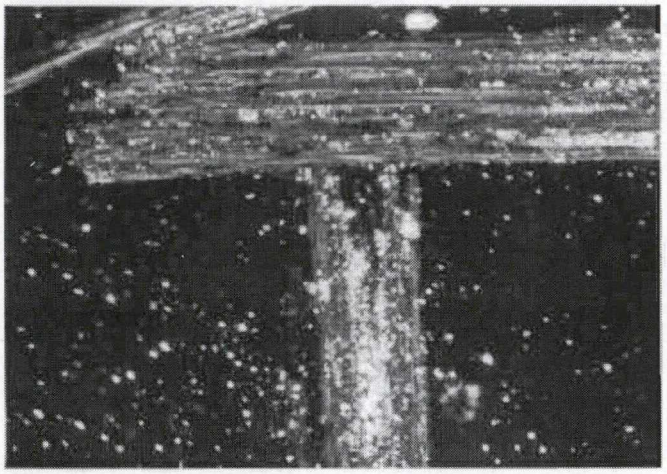


Photo 17 WPDS2 VP0789
Waterpipe: crocidolite, DS colors, RI fluid 1.700

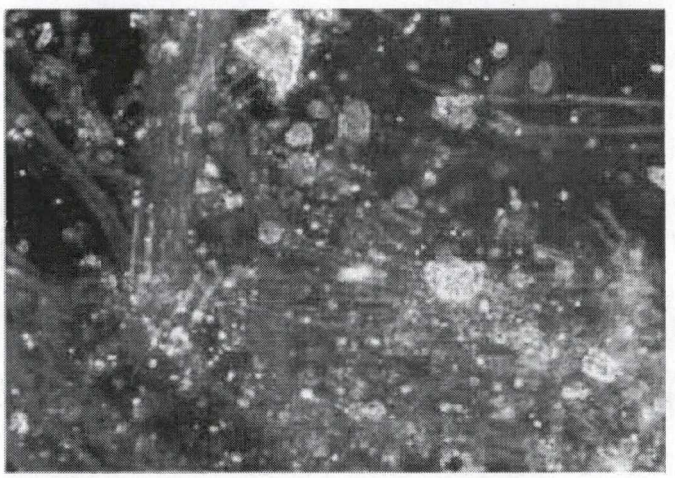


Photo 18 WPDS3 VP0789
Waterpipe: chrysotile, DS colors, RI fluid 1.550

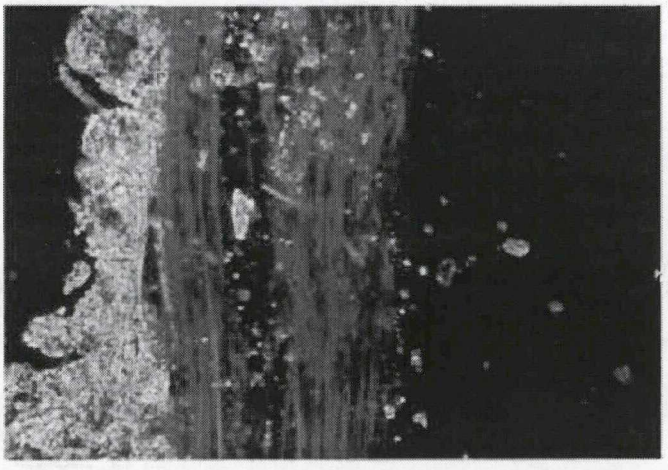


Photo 19 WPDS4 VP0789
Waterpipe: chrysotile, DS colors, RI fluid 1.550

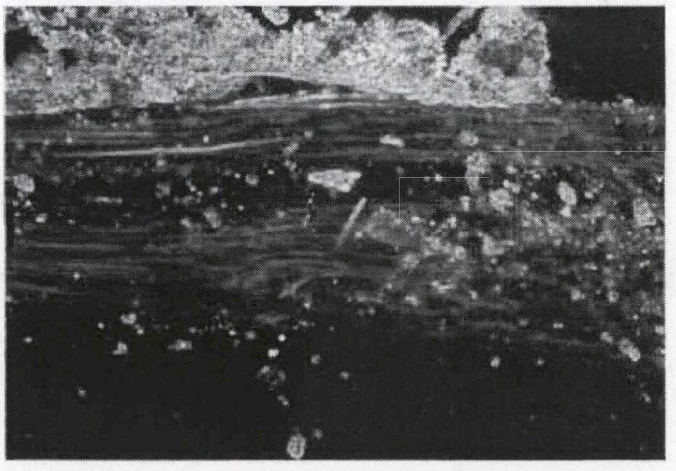


Photo 20 WPDS5 VP0789
Waterpipe: chrysotile, DS colors, RI fluid, 1.550

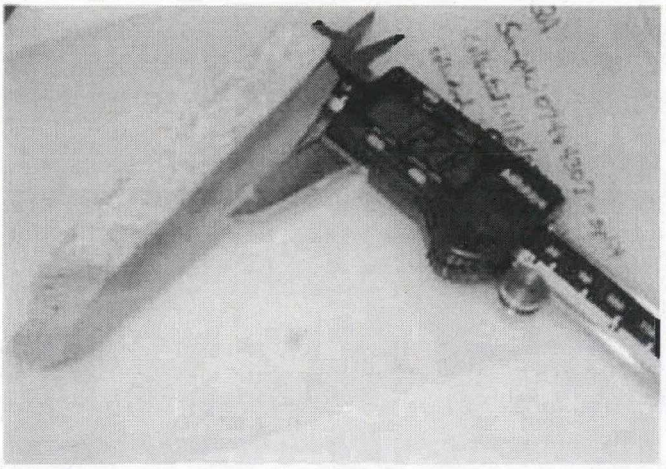


Photo 7 VP0789 01-28-08 002 VP0789
Pipe in digital caliper, 12.28 mm thick

Photo 8 waterpipe neat 1 VP0789
Edge of pipe, 6.3X

Photo 9 waterpipe neat 2 VP0789
Edge of pipe, 6.3X

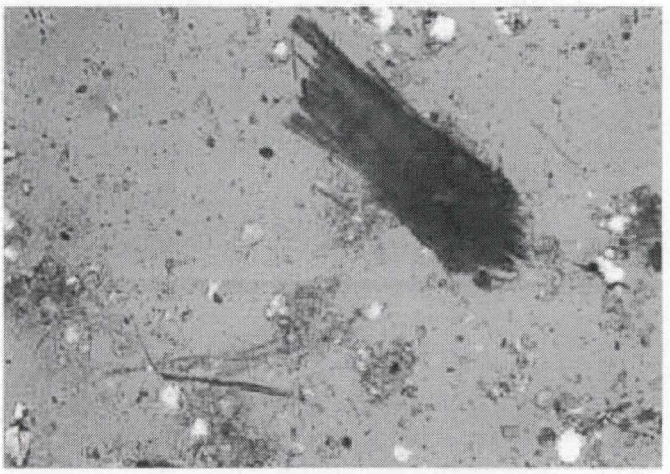


Photo 10 WPR1 orig VP0789
Waterpipe: chrysotile, crocidolite, perlite, quartz

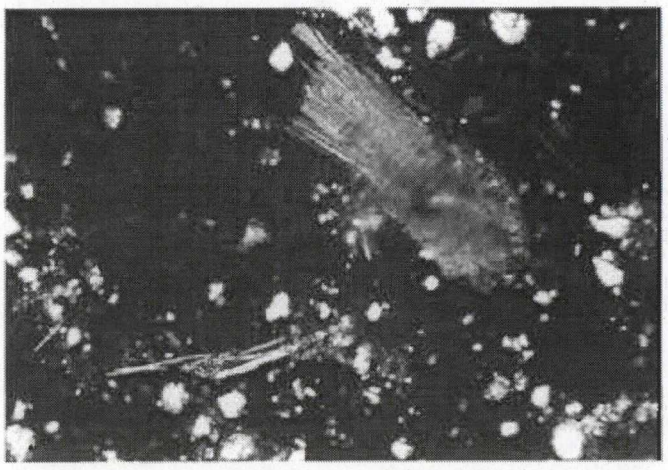


Photo 11 WPX1 orig VP0789
Waterpipe: chrysotile, crocidolite, perlite, quartz

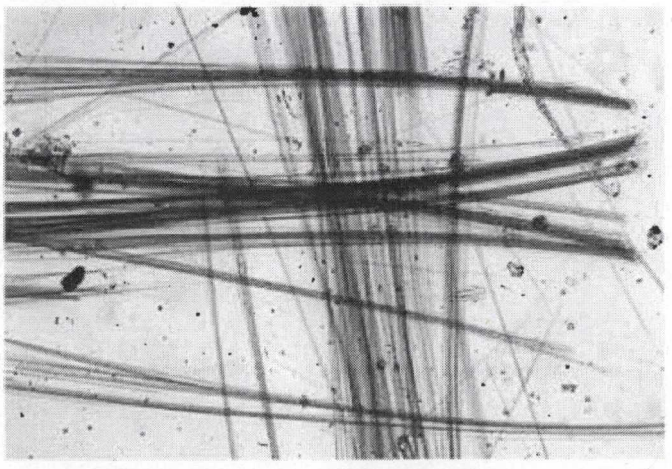


Photo 14 WPS1 VP0789
Waterpipe: crocidolite, pleochroism

Photo 1 VP0789 01-25-08 001 VP0789
Fed Ex Pak as received

Photo 2 VP0789 01-25-08 002 VP0789
Inner bag of bubble wrap with sample inside

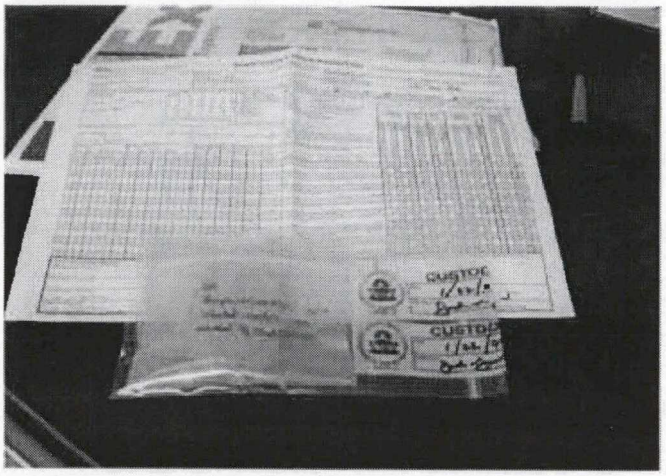


Photo 3 VP0789 01-25-08 003 VP0789
Sample and chain of custody

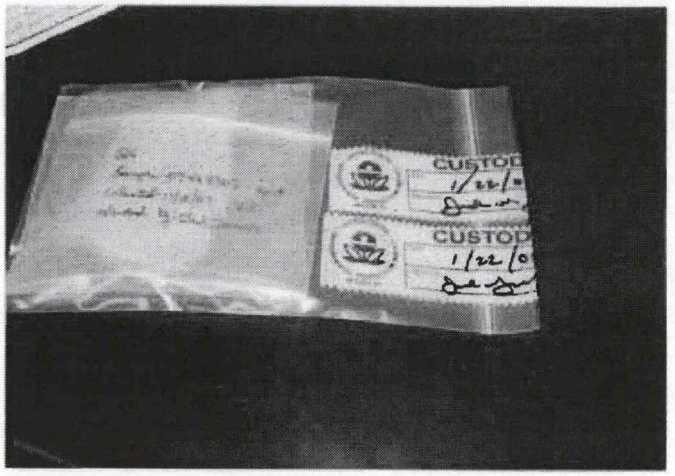


Photo 4 VP0789 01-25-08 004 VP0789
Front of sample bag with custody seals

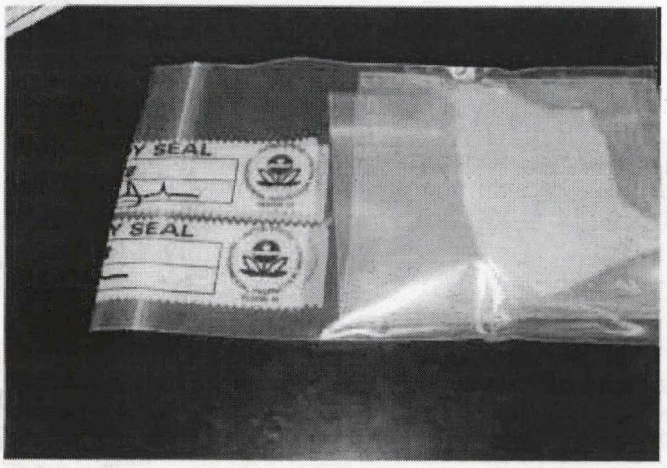


Photo 5 VP0789 01-25-08 005 VP0789
Back of sample bag with custody seals

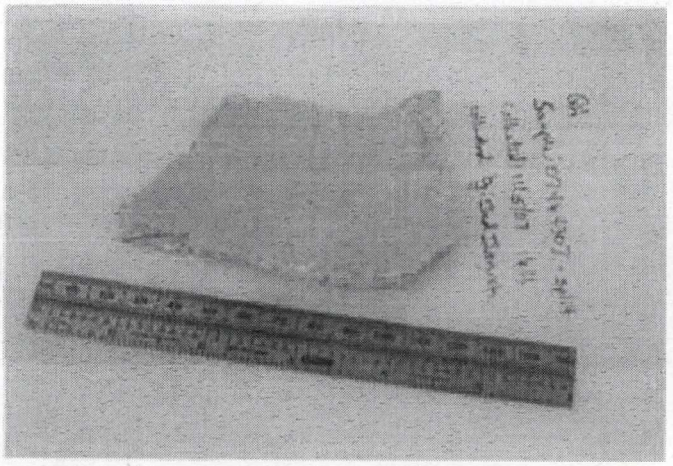


Photo 6 VP0789 01-28-08 001 VP0789
Piece of cement pipe next to ruler

...A EP... 10, 120... Avenue, ...ttle, WA 9810... ...mple ...stod, ... Anal...s Re... ...ed F... ...chester ...y, 7411 ... ...rive Eas... ...chard, ...n, 360-8...

Form Effective Date: July 2005 Revision 1

Project Name	Project Code	Method of Shipment/carrier	Airbill Number (if known prior to sealing)
Mountain Home IG	ESD-138B	Federal Express	7914 8210 8980
Account Code	**EPA Project Manager/phone number**	**Check all that apply**	
08098IDP501ESDC	Michele Wright, NESHAP Coordinator, (206)553-	☒ Enforce/Custody ☒ Possible Toxic/Hazardous ☒ Data Confidential	

Sampler Names (Print & Sign) *Mark (R) after name of principal recorder*
Jed Jansch (R), Jed Jansch
(360) 871 - 8731

If applicable, circle the set of selected metals:

Al	Sb	As	Ba	Be
B	Cd	Ca	Cr	Co
Cu	Fe	Pb	Mg	Mn
Mo	Ni	K	Se	Ag
Na	Sn	Tl	V	Zn

(see reverse for more to add/circle)

① Matrix Codes:
10 Water/Liquid (Total)
20 Water/Liquid (Filtered)
(40) Sediment/Soil/Solid/Bulk
70 Tissue
80 Oil/Solvent
44 Air filter
42 Wipe/Swab[1]
00 _____

[1] PCB wipe is to be 10cm x 10cm (100 cm²)

#C ② enter the number of containers for each preservative type followed by the appropriate preservation code P ②:

A - HCl
B - HNO_3
C - NaOH
D - H_2SO_4
E - $Na_2S_2O_3$
F - ascorbic acid[2], then HCl
G - $Na_2S_2O_3$+EDTA
H - EDTA
N - No chemical preservation
P - Bottles pre-preserved at lab
T - To be preserved at the lab
[2] $Na_2S_2O_3$ if required by plan

W - _____

☐ Check here if the cooler is iced

② Enter the letter or range of letters on each container for each group of containers with the same preservative type. Each container for each unique sample number must have a unique letter on it

Laboratory: *see the applicable QAPP, SOW and/or Analytical Support Request for specific methods and detection, reporting, and/or quantitation limits*
Samples to be analyzed by Method EPA600/R93/186

Sampler's comments for the laboratory
split sample for analysis by alternate analyst (inter-laboratory) for Quality Assurance.

EPA Sample number (Yr / Wk / Sequence)	Sampling Date & Time (Yr / Mo / Day / Time)	Matrix ①	#C ②	P ②	#C ②	P ②	#C ②	P ②	#C ②	P ②	Sampler Initials	Sample/Station Description/Field Measurements	Organics (see reverse): VOAs / BNA / Pest / PCB / PAH	Metals (see reverse): CLP / Boracloid / Mercury	Micro (see reverse): E. Coli / F. Coliform / T. Coliform	General Chemistry (see reverse): TSS / TDS / BOD 5 / NO2+NO3 / Oil & Grease	Asbestos	Additional Write In Analyses (see reverse)
07 / 46 / 4303	07 / 11 / 15 / 1621	40	1	N							JJ	Water Pipe, Sifted Rock Pile					X	

Chain of Custody Record

Relinquished by (Signature)	Date	Time	Received by (Signature)	Date	Time
Relinquished by (Signature)	Date	Time	Received by (Signature)	Date	Time
Relinquished by (Signature)	Date 1/22/08	Time 12:00	Received by Mobile Lab for Field Analysis (Signature)	Date	Time
Shipped by (Signature)	Date 1/22/08	Time 12:00	Received for lab by (Signature)	Date 1-23-08	Time 2:10 pm

Receiving Laboratory Information Condition of Samples upon Receipt at Lab:
Fed Ex tracking 7914 8210 8980. Bag intact when received.

Custody Seals Intact: ☒ yes ☐ no ☐ none

Distribution: White - Laboratory Copy, Yellow - Regional Sample Control Center (RSCC) Copy, Pink - Field or Office Copy

LABORATORY ACTIVITIES

A FedEx Pak shipped by Federal Express (tracking no. 7914 8210 8980) was received on January 23, 2008. The Pak remained sealed until an NEIC project number was assigned. The Pak was opened and inventoried on January 25, 2008. One NEIC sample tag was issued and assigned to the sample on January 28, 2008. The sample was maintained under custody in accordance with the NEIC evidence management procedure, NEICPROC/00-059R2. A copy of the Chain-of-Custody Record is contained in Appendix A. The sample was stored in a secure storage cabinet in the NEIC Building 25 laboratory area when not being analyzed.

The sample was a piece of cement pipe, approximately 2 inches by 4 inches. The pipe was 12.28-mm thick. The thickness of the pipe was measured using a Mitutoyo Digital Caliper. The cement pipe was nonfriable.

Sample analysis was performed by Peggy Forney. Richard Martinez performed the alternate analyst testing using the same analytical procedure. All analyses were performed in accordance with the NEIC Procedure, Determination of Asbestos in Bulk Building Materials, NEICPROC/01-002R4. The cement pipe was hard. Pieces were removed using pliers and crushed with a mortar and pestle. The crushed sample went through a gravimetric matrix reduction procedure referenced in EPA Test Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116. Analysis was by polarized light microscopy.

The sample was photographed in the laboratory using a Canon PowerShot A540 Digital Camera and a Q-Imaging MicroPublisher 3.3 Digital Camera. Photographs and a photograph log were prepared, and are included in Appendix B. The analytical results are summarized in Table 1, and data quality summaries are maintained in the project file.

Table 1

LABORATORY SAMPLE DESCRIPTIONS AND ANALYTICAL RESULTS

EPA Sample Number	NEIC Tag Number	Laboratory Description	Chrysotile Asbestos (%)	Crocidolite Asbestos (%)
07464303	NE22672	Hard cement water pipe, 2"x 4", 12.28-mm thick with visible white and blue fibers on broken edges.	6.5	10

EXECUTIVE SUMMARY

INTRODUCTION

The National Enforcement Investigations Center (NEIC) provided laboratory assistance to the U.S. Environmental Protection Agency (EPA) Region 10 Laboratory. The objective of the NEIC laboratory support was to perform qualitative and quantitative analysis for asbestos on one sample that was previously analyzed by the Region 10 laboratory (alternate laboratory/alternate analyst confirmation).

The laboratory activities described in this report were performed by NEIC personnel in accordance with the NEIC Quality System. This work was conducted during January 2008.

SUMMARY OF FINDINGS

- The sample tested positive for chrysotile and crocidolite asbestos at levels greater than one percent.

CONTENTS

This Contents page shows all the sections contained in this report and provides a clear indication of the end of this report.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement and Compliance Assurance
Office of Criminal Enforcement, Forensics and Training

NEIC VP0789E01

TECHNICAL REPORT

Interlaboratory Testing Results for Region 10 Manchester Laboratory

NEIC Project No.: VP0789

March 2008

Project Leader/Principal Analytical Chemist
Peggy Forney

Peggy S. Forney

Prepared for:
U.S. EPA Region 10 – Manchester Laboratory
Mail Code: LAB
7411 Beach Drive East
Port Orchard, Washington 98366

Authorized for release by:

Elizabeth G. Nicholas for
K. Eric Nottingham, Laboratory Branch Chief

NATIONAL ENFORCEMENT INVESTIGATIONS CENTER
Building 25, Box 25227
Denver Federal Center
Denver, Colorado 80225

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF CRIMINAL ENFORCEMENT, FORENSICS AND TRAINING
NATIONAL ENFORCEMENT INVESTIGATIONS CENTER
P.O. BOX 25227, DENVER FEDERAL CENTER
DENVER, COLORADO 80225

March 14, 2008

MEMORANDUM

SUBJECT: Interlaboratory Testing Results for Region 10 Manchester Laboratory
NEIC Project No.: VP0789

FROM: Gene Lubieniecki KEN for G. Lubieniecki
Civil Program Coordinator, NEIC

TO: Jed Januch
US EPA Region 10 - Manchester Laboratory
Port Orchard, Washington

Attached is a report for the interlaboratory testing requested by your office. If there are any questions, please contact Peggy Forney at (303) 462-9110.

Attachment

cc: Carol Haines, QA Coordinator, U.S. EPA Region 10 Laboratory
Marina Aleynikov, QA Representative, Laboratory Branch, NEIC
K.E. Nottingham, Laboratory Branch Chief, NEIC
Peggy Forney, Asbestos Unit Coordinator, NEIC

Manchester Environmental Laboratory
Report by Parameter for Project ESD-138B

Project Code:	ESD-138B	**Collected:**	11/16/07
Project Name:	MOUNTAIN HOME IG	**Matrix:**	Solid
Project Officer:	MICHELE WRIGHT	**Sample Number:**	07464312
Account Code:	0809B10P501E50C	**Type:**	Reg sample
Station Description:	WATER PIPE VERLINDE HILLS		

GEN

Parameter : Bulk Asbestos Analysis — Container ID : N1

Method : 600R93/116 Method for the Determination of Asbestos in Bulk Building Materials — Analysis Date : 2/25/2008

Prep Method : — Prep Date :

		Result	Units	Qlfr
Analytes(s):	*200009 Actinolite			A
	*200006 Amosite			A
	*200007 Anthophyllite			A
	*200005 Chrysotile			PNQ
	*200010 Crocidolite			PNQ
	*200124 Non-Asbestos			PNQ
	*200125 Other Fibrous Amphibole			A
	*200008 Tremolite			A

Manchester Environmental Laboratory
Report by Parameter for Project ESD-138B

Project Code:	ESD-138B	**Collected:**	11/16/07
Project Name:	MOUNTAIN HOME IG	**Matrix:**	Solid
Project Officer:	MICHELE WRIGHT	**Sample Number:**	07464311
Account Code:	0809B10P501E50C	**Type:**	Reg sample
Station Description:	WATER PIPE VERLINDE HILLS		

			Result	Units	Qlfr
GEN					
Parameter	: Bulk Asbestos Analysis			Container ID :	N1
Method	: 600R93/116	Method for the Determination of Asbestos in Bulk Building Materials		Analysis Date :	1/22/2008
Prep Method	:			Prep Date :	
Analytes(s):	*200009	Actinolite			A
	*200006	Amosite			A
	*200007	Anthophyllite			A
	*200005	Chrysotile	8-12	%	
	*200010	Crocidolite	5-10	%	
	*200124	Non-Asbestos			PNQ
	*200125	Other Fibrous Amphibole			A
	*200008	Tremolite			A

Manchester Environmental Laboratory
Report by Parameter for Project ESD-138B

Project Code:	ESD-138B	**Collected:**	11/16/07
Project Name:	MOUNTAIN HOME IG	**Matrix:**	Solid
Project Officer:	MICHELE WRIGHT	**Sample Number:**	07464310
Account Code:	0809B10P501E50C	**Type:**	Reg sample
Station Description:	WATER PIPE VERLINDE HILLS		

GEN

Parameter : Bulk Asbestos Analysis — Container ID : N1

Method : 600R93/116 Method for the Determination of Asbestos in Bulk Building Materials — Analysis Date : 1/22/2008

Prep Method : — Prep Date :

		Result	Units	Qlfr
Analytes(s):	*200009 Actinolite			A
	*200006 Amosite			A
	*200007 Anthophyllite			A
	*200005 Chrysotile	8-12	%	
	*200010 Crocidolite	1-5	%	
	*200124 Non-Asbestos			PNQ
	*200125 Other Fibrous Amphibole			A
	*200008 Tremolite			A

Manchester Environmental Laboratory
Report by Parameter for Project ESD-138B

Project Code:	ESD-138B	**Collected:**	11/16/07
Project Name:	MOUNTAIN HOME IG	**Matrix:**	Solid
Project Officer:	MICHELE WRIGHT	**Sample Number:**	07464309
Account Code:	0809B10P501E50C	**Type:**	Reg sample
Station Description:	WATER PIPE VERLINDE HILLS		

GEN

Parameter : Bulk Asbestos Analysis — Container ID : N1

Method : 600R93/116 Method for the Determination of Asbestos in Bulk Building Materials — Analysis Date : 2/25/2008

Prep Method : — Prep Date :

		Result	Units	Qlfr
Analytes(s):	*200009 Actinolite			A
	*200006 Amosite			A
	*200007 Anthophyllite			A
	*200005 Chrysotile			PNQ
	*200010 Crocidolite			PNQ
	*200124 Non-Asbestos			PNQ
	*200125 Other Fibrous Amphibole			A
	*200008 Tremolite			A

Manchester Environmental Laboratory
Report by Parameter for Project ESD-138B

Project Code:	ESD-138B	**Collected:**	11/16/07
Project Name:	MOUNTAIN HOME IG	**Matrix:**	Solid
Project Officer:	MICHELE WRIGHT	**Sample Number:**	07464308
Account Code:	0809B10P501E50C	**Type:**	Reg sample
Station Description:	VERLINDE HILLS, WATER PIPE		

GEN

Parameter : Bulk Asbestos Analysis — Container ID : N1

Method : 600R93/116 Method for the Determination of Asbestos in Bulk Building Materials — Analysis Date : 2/25/2008

Prep Method : — Prep Date :

		Result	Units	Qlfr
Analytes(s):	*200009 Actinolite			A
	*200006 Amosite			A
	*200007 Anthophyllite			A
	*200005 Chrysotile			PNQ
	*200010 Crocidolite			PNQ
	*200124 Non-Asbestos			PNQ
	*200125 Other Fibrous Amphibole			A
	*200008 Tremolite			A

Manchester Environmental Laboratory
Report by Parameter for Project ESD-138B

Project Code:	ESD-138B	**Collected:**	11/15/07
Project Name:	MOUNTAIN HOME IG	**Matrix:**	Solid
Project Officer:	MICHELE WRIGHT	**Sample Number:**	07464305
Account Code:	0809B10P501E50C	**Type:**	Reg sample
Station Description:	WATER PIPE, 2'BGS, OPEN TRENCH		

GEN

Parameter : Bulk Asbestos Analysis — Container ID : N1

Method : 600R93/116 Method for the Determination of Asbestos in Bulk Building Materials — Analysis Date : 1/25/2008

Prep Method : — Prep Date :

			Result	Units	Qlfr
Analytes(s):	*200009	Actinolite			A
	*200006	Amosite			A
	*200007	Anthophyllite			A
	*200005	Chrysotile	10-15	%	
	*200010	Crocidolite	1-5	%	
	*200124	Non-Asbestos			PNQ
	*200125	Other Fibrous Amphibole			A
	*200008	Tremolite			A

Manchester Environmental Laboratory
Report by Parameter for Project ESD-138B

Project Code:	ESD-138B	**Collected:**	11/15/07
Project Name:	MOUNTAIN HOME IG	**Matrix:**	Solid
Project Officer:	MICHELE WRIGHT	**Sample Number:**	07464304
Account Code:	0809B10P501E50C	**Type:**	Reg sample
Station Description:	WATER PIPE, ROCK PILE MOSS ST		

GEN

Parameter : Bulk Asbestos Analysis — Container ID : N1

Method : 600R93/116 Method for the Determination of Asbestos in Bulk Building Materials — Analysis Date : 2/25/2008

Prep Method : — Prep Date :

		Result	Units	Qlfr
Analytes(s):	*200009 Actinolite			A
	*200006 Amosite			A
	*200007 Anthophyllite			A
	*200005 Chrysotile			PNQ
	*200010 Crocidolite			PNQ
	*200124 Non-Asbestos			PNQ
	*200125 Other Fibrous Amphibole			A
	*200008 Tremolite			A

Manchester Environmental Laboratory
Report by Parameter for Project ESD-138B

Project Code:	ESD-138B	**Collected:**	11/15/07
Project Name:	MOUNTAIN HOME IG	**Matrix:**	Solid
Project Officer:	MICHELE WRIGHT	**Sample Number:**	07464303
Account Code:	0809B10P501E50C	**Type:**	Reg sample
Station Description:	WATER PIPE, SIFTED ROCK PILE		

			Result	Units	Qlfr
GEN					
Parameter	: Bulk Asbestos Analysis			Container ID :	N1
Method	: 600R93/116	Method for the Determination of Asbestos in Bulk Building Materials		Analysis Date :	1/10/2008
Prep Method	:			Prep Date :	
Analytes(s):	*200009	Actinolite			A
	*200006	Amosite			A
	*200007	Anthophyllite			A
	*200005	Chrysotile	10-15	%	
	*200010	Crocidolite	1-5	%	
	*200124	Non-Asbestos			PNQ
	*200125	Other Fibrous Amphibole			A
	*200008	Tremolite			A

Report by Parameter for Project ESD-138B

Project Code:	ESD-138B	**Collected:**	11/15/07
Project Name:	MOUNTAIN HOME IG	**Matrix:**	Solid
Project Officer:	MICHELE WRIGHT	**Sample Number:**	07464302
Account Code:	0809B10P501E50C	**Type:**	Reg sample
Station Description:	WATER PIPE, ENTRANCE TO PHASE 7		

GEN

Parameter : Bulk Asbestos Analysis — Container ID : N1

Method : 600R93/116 Method for the Determination of Asbestos in Bulk Building Materials — Analysis Date : 2/21/2008

Prep Method : — Prep Date :

		Result	Units	Qlfr
Analytes(s):	*200009 Actinolite			A
	*200006 Amosite			A
	*200007 Anthophyllite			A
	*200005 Chrysotile			PNQ
	*200010 Crocidolite			PNQ
	*200124 Non-Asbestos			PNQ
	*200125 Other Fibrous Amphibole			A
	*200008 Tremolite			A

Manchester Environmental Laboratory
Report by Parameter for Project ESD-138B

Project Code:	ESD-138B	**Collected:**	11/15/07
Project Name:	MOUNTAIN HOME IG	**Matrix:**	Solid
Project Officer:	MICHELE WRIGHT	**Sample Number:**	07464301
Account Code:	0809B10P501E50C	**Type:**	Reg sample
Station Description:	PIPE MATERIAL IN BETWEEN UNITS 14& 15		

		Result	Units	Qlfr

GEN

Parameter : Bulk Asbestos Analysis — Container ID : N1

Method : 600R93/116 Method for the Determination of Asbestos in Bulk Building Materials — Analysis Date : 2/21/2008

Prep Method : — Prep Date :

Analytes(s):	*200009	Actinolite	A
	*200006	Amosite	A
	*200007	Anthophyllite	A
	*200005	Chrysotile	PNQ
	*200010	Crocidolite	PNQ
	*200124	Non-Asbestos	PNQ
	*200125	Other Fibrous Amphibole	A
	*200008	Tremolite	A

Manchester Environmental Laboratory
Report by Parameter for Project ESD-138B

Project Code:	ESD-138B	**Collected:**	11/15/07
Project Name:	MOUNTAIN HOME IG	**Matrix:**	Solid
Project Officer:	MICHELE WRIGHT	**Sample Number:**	07464300
Account Code:	0809B10P501E50C	**Type:**	Duplicate
Station Description:	WATER PIPE IN OPEN TRENCH, PHASE 6		

GEN

Parameter : Bulk Asbestos Analysis — Container ID : N1

Method : 600R93/116 Method for the Determination of Asbestos in Bulk Building Materials — Analysis Date : 1/25/2008

Prep Method : — Prep Date :

			Result	Units	Qlfr
Analytes(s):	*200009	Actinolite			A
	*200006	Amosite			A
	*200007	Anthophyllite			A
	*200005	Chrysotile	8-12	%	
	*200010	Crocidolite	1-5	%	
	*200124	Non-Asbestos			PNQ
	*200125	Other Fibrous Amphibole			A
	*200008	Tremolite			A

Manchester Environmental Laboratory
Report by Parameter for Project ESD-138B

Project Code:	ESD-138B	**Collected:**	11/15/07
Project Name:	MOUNTAIN HOME IG	**Matrix:**	Solid
Project Officer:	MICHELE WRIGHT	**Sample Number:**	07464300
Account Code:	0809B10P501E50C	**Type:**	Reg sample
Station Description:	WATER PIPE IN OPEN TRENCH, PHASE 6		

GEN

Parameter : Bulk Asbestos Analysis — Container ID : N1

Method : 600R93/116 Method for the Determination of Asbestos in Bulk Building Materials — Analysis Date : 1/7/2008

Prep Method : — Prep Date :

		Result	Units	Qlfr
Analytes(s):	*200009 Actinolite			A
	*200006 Amosite			A
	*200007 Anthophyllite			A
	*200005 Chrysotile	10-15	%	
	*200010 Crocidolite	5-10	%	
	*200124 Non-Asbestos			PNQ
	*200125 Other Fibrous Amphibole			A
	*200008 Tremolite			A

Figure 7 – Chrysotile fiber bundles isolated from sample 0746310 immersed in 1.550 liquid. The fiber bundles are observed under crossed polars at magnification of 100x.

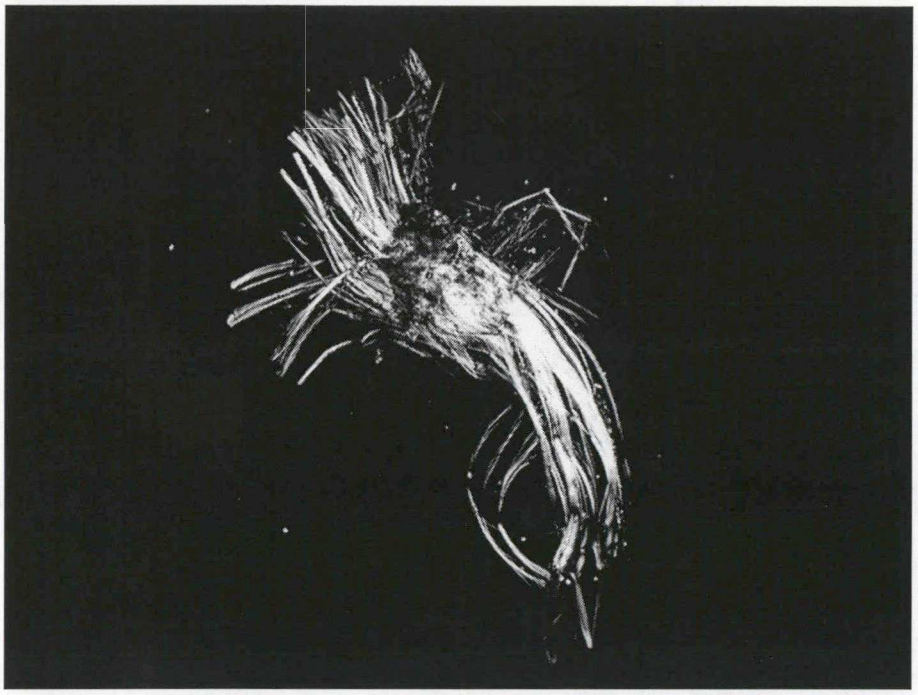


Figure 8 – Chrysotile fiber bundles isolated from the QA duplicate analysis of sample 0746300 immersed in 1.550 liquid. The fiber bundles are observed under crossed polars at magnification of 400x.

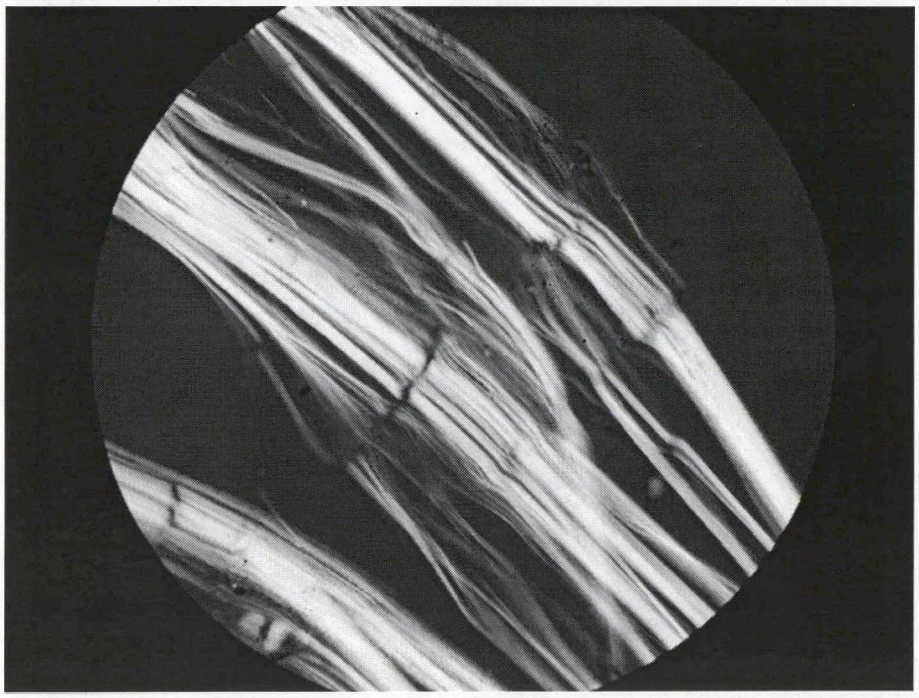


Figure 5 – Chrysotile fiber bundles isolated from sample 0746300 immersed in 1.550 liquid. The fiber bundles are observed in the parallel position under a dispersion staining objective at magnification of 100x.

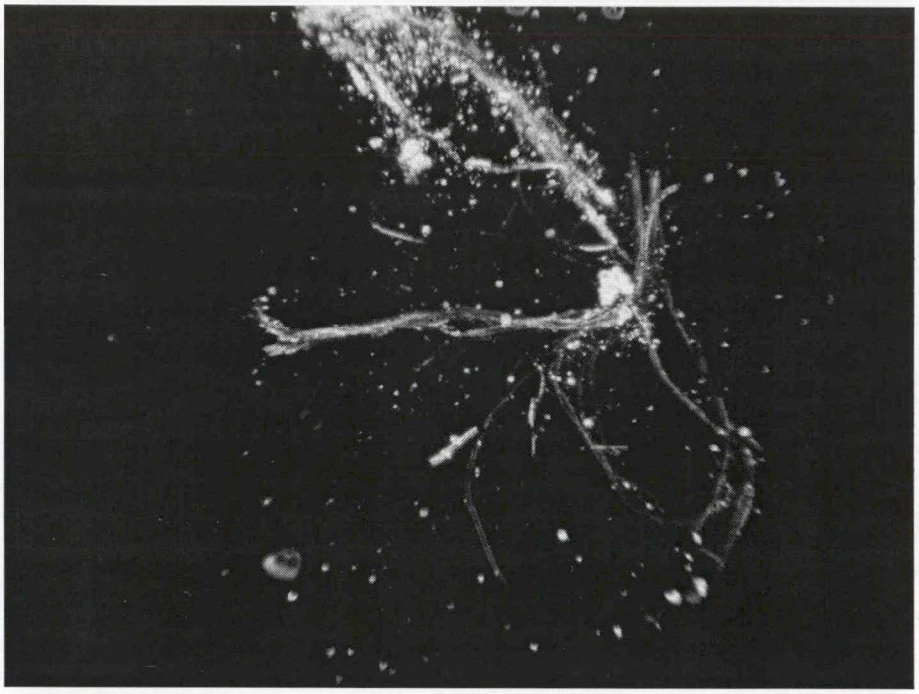


Figure 6 – Chrysotile fiber bundles isolated from sample 0746300 immersed in 1.550 liquid. The fiber bundles are observed in the perpendicular position under a dispersion staining objective at magnification of 100x.

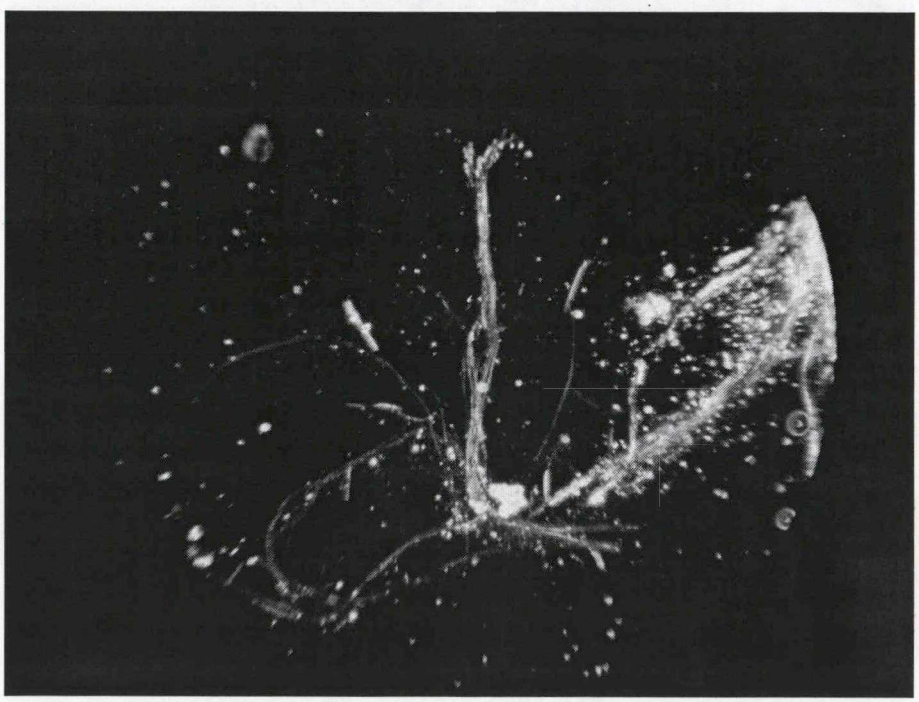


Figure 3 – Crocidolite fiber bundles from sample number 07464300 in 1.680 liquid viewed with transmitted light at 100 x magnification.

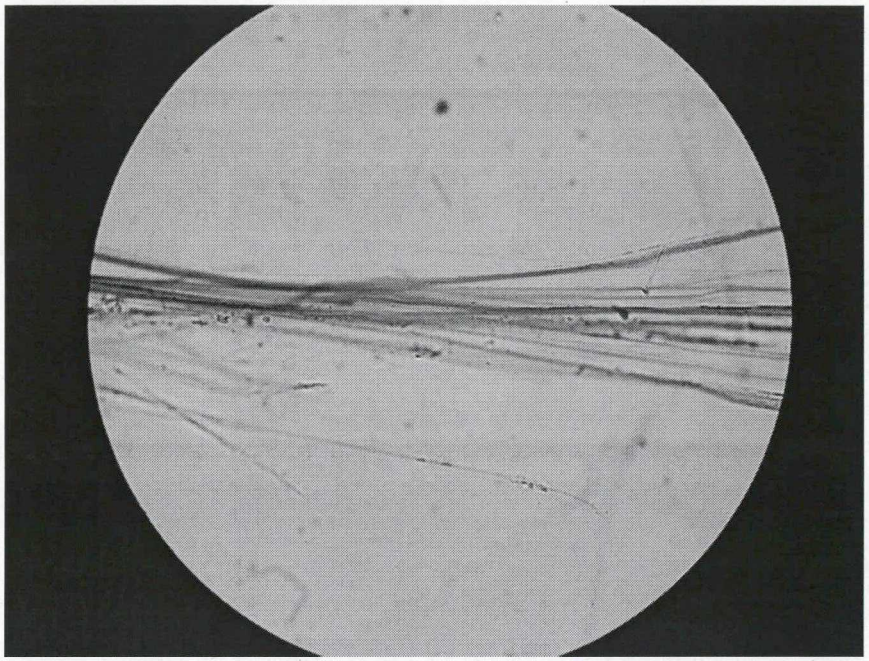
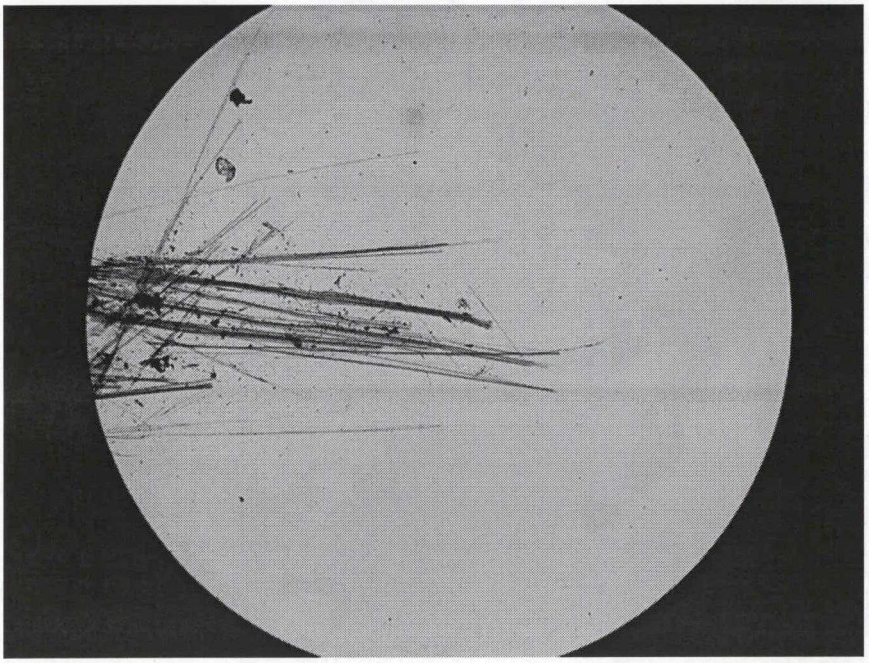


Figure 4 – Crocidolite fiber bundles from sample number 07464310 in 1.680 liquid viewed with transmitted light at 100 x magnification.



The following photomicrographs were taken with a Nikon Coolpix 4300 digital camera.

Figure 1 – White chrysotile and blue crocidolite fiber bundles protruding from the broken edge of cement asbestos pipe fragment, sample number 07464300, collected at the Phase 6 construction site at Mountain Home AFB. The image was acquired with the aid of a Wild M5 stereomicroscope at 6x magnification.

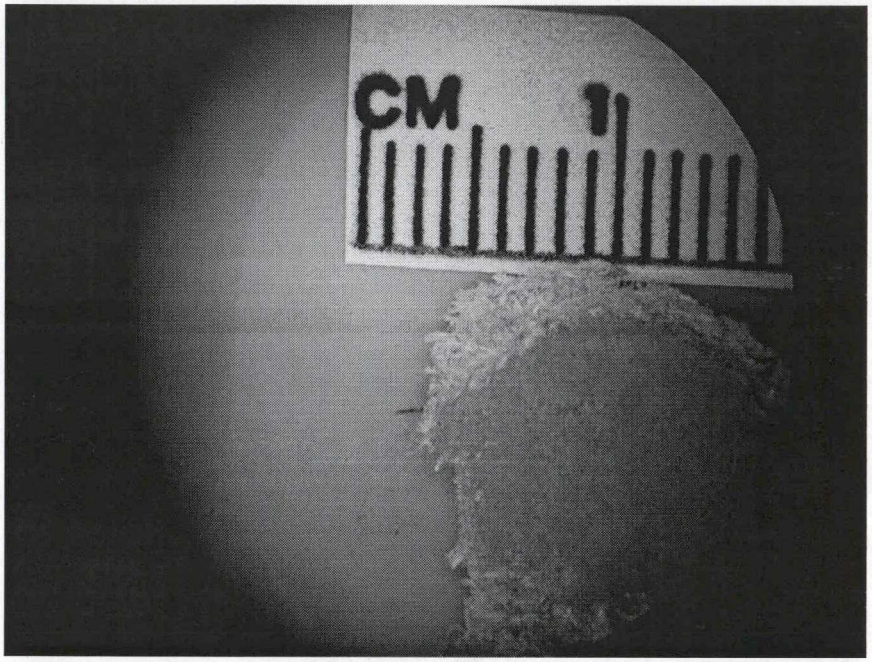
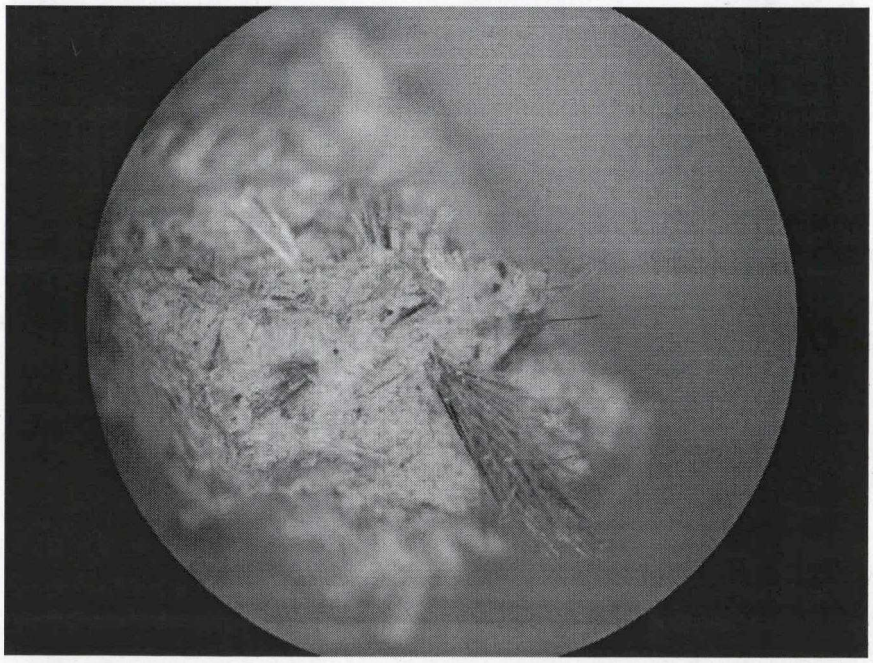


Figure 2 – White chrysotile and blue crocidolite fiber bundles protruding from the broken edge of cement asbestos pipe fragment, sample number 07464310, collected at the Verlinde Hill Debris Field at Mountain Home AFB. The image was acquired with the aid of a Wild M5 stereomicroscope at 25x magnification.



In addition, I analyzed two of the samples by x-ray diffraction (XRD) to verify that the minerals clinochrysotile (chrysotile) and riebeckite (crocidolite) were present. The results of the XRD analysis will be reported in a separate document.

7.0 Reporting Limits / Data Qualifiers

The detection limit for asbestos minerals by PLM is approximately 1%. The sample results for this project were reported as the average percentage based on gravimetric matrix reduction and/or visual estimate and the qualifier for present (P) is used. If the component is present but no percentage is reported, the qualifier for present but not quantified (PNQ) is used. If the component is not present, the qualifier for absent (A) is used. If the component is positively identified but is estimated to be less than 1%, the qualifier used is trace (T).

minutes and filtered through a 0.4 μm polycarbonate filter to remove acid soluble components. The remaining residue was air dried at ambient room temperature on the polycarbonate filter for approximately 24 hours. The dried residue was weighed to determine the amount of acid soluble components that were lost during matrix reduction.

3.2 Bulk sample numbers 07464301, 07454302, 07464304, 07464308, 07464309 and 07464312 – Theses samples were analyzed by stereomicroscope to determine if fibrous material was present. Analysis consisted of hand-picking suspect fiber bundles that were protruding from the broken surfaces of the samples. The fiber bundles were immersed in refractive index liquid for analysis by PLM.

4.0 Asbestos Measurement System Calibration

The calibration for the PLM and the refractive index liquids were performed as required using appropriate methods and procedures. Prior to analysis the PLM was checked for Köhler illumination. A stage micrometer slide was used to calibrate the measurement ocular at 100x, 200x and 400x magnifications. Refractive index liquids used for this project were verified accurate on November 29, 2007, using an Abbe refractometer.

5.0 Analytical Procedures

The analysis of samples for this project was done according to the EPA Region 10 standard operating procedure for analysis of bulk asbestos samples by stereo and polarized light microscopy and method EPA/600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials. The analysis was performed using a Wild M-5 stereomicroscope with a magnification range of 6x to 50x and a Carl Zeiss Axioskop 40 PLM with a magnification range of 100x to 400x and 100x for dispersion staining.

Suspected asbestos fiber bundles were hand-picked from samples with the aid of a stereomicroscope and mounted in appropriate refractive index liquid for analysis by PLM. The determination of asbestos content is done by evaluation of the morphology and optical properties of suspected asbestos fibers. The raw data prepared for this project documents the gross sample description, stereomicroscopic observations, and optical properties including extinction angle, sign of elongation, and central-stop dispersion staining characteristics in appropriate refractive index liquids. The percent concentration of asbestos is based on a visual estimate of the amount of asbestos fiber bundles observed in the remaining residue after gravimetric matrix reduction.

6.0 Quality Assurance and Quality Control

Prior to analyzing samples for this project, method blanks prepared in 1.550 and 1.680 refractive index liquids, were analyzed to determine that supplies and tools used for this project were asbestos-free.

The data quality objectives were met by conducting re-analysis by the same analyst and re-analysis of one of the samples by another analyst (Peggy Forney, with the National Enforcement Investigations Center in Denver, Colorado). For reference, I analyzed specimens of chrysotile and crocidolite from standard reference material (SRM) 1866b as QA/QC samples. A set of commercially prepared slides were reviewed as additional references.

1.0 Holding time and Chain of Custody

There is no recommended holding time for asbestos samples. The samples were received in the laboratory on November 19, 2007 and the analysis was completed on February 25, 2008. The Manchester Environmental Laboratory is a secure facility and the asbestos analysis area requires a key card for access.

2.0 Results of Analysis

Chrysotile asbestos and crocidolite asbestos (asbestiform riebeckite) were detected in all of the samples collected at Mountain Home AFB. The results of analysis are summarized in Table 1. Photomicrographs associated with this project are displayed in Figures 1- 8.

Table 1 Results of analysis by PLM

Sample Number	Final Asbestos Result	Comments
07464300	chrysotile **10-15%** crocidolite **5-10%**	EPA QA duplicate analysis chrysotile **8-12%** crocidolite **1-5%**
07464301	chrysotile PNQ[1] crocidolite PNQ	Qualitative Estimate >1% asbestos
07464302	chrysotile PNQ crocidolite PNQ	Qualitative Estimate >1% asbestos
07464303	chrysotile **10-15%** crocidolite **1-5%**	
07464304	chrysotile PNQ crocidolite PNQ	Qualitative Estimate >1% asbestos
07464305	chrysotile **10-15%** crocidolite **1-5%**	
07464308	chrysotile PNQ crocidolite PNQ	Qualitative Estimate >1% asbestos
07464309	chrysotile PNQ crocidolite PNQ	Qualitative Estimate >1% asbestos
07464310	chrysotile **8-12%** crocidolite **1-5%**	
07464311	chrysotile **8-12%** crocidolite **5-10%**	
07464312	chrysotile PNQ crocidolite PNQ	Qualitative Estimate >1% asbestos

[1] PNQ – The asbestos was present but not quantified.

3.0 Sample Preparation

The sample preparation techniques used for this project are as follows:

3.1 Bulk sample numbers 07464300, 07454303, 07464305, 07464310, and 07464311 – These samples were analyzed by stereomicroscope to determine if fibrous material was present. Preliminary analysis consisted of hand-picking suspect fiber bundles that were protruding from the broken surfaces of the samples. The fiber bundles were immersed in refractive index liquid for analysis by PLM. To increase the accuracy and precision of the analysis, I preformed the matrix reduction steps in EPA method 600/R-93/116.

The samples were pulverized with a McCrone percussion mortar and milled in a SPEX freezer mill to reduce the grain size and better homogenize the samples. The samples were treated with a 3 normal (N) hydrochloric acid (HCl) solution for approximately 15

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
PortOrchard, Washington 98366

March 3, 2008

MEMORANDUM

TO: Michelle Wright, Asbestos NESHAP Coordinator
Office of Enforcement and Compliance
Air and RCRA Compliance Unit

FROM: Jed Januch, Senior Investigator
Office of Environmental Assessment
Environmental Services Unit

CC: Ellie Hale, Project Manager
Office of Environmental Cleanup
Site Cleanup Unit 2

SUBJECT: Narrative for asbestos analysis by stereomicroscope and polarized light microscopy for samples from the Mountain Home AFB Asbestos Project

Project Code: ESD-138B
Account Code: 0708B10P501E50C

QA REVIEWER: Susan Carrell, Washington State Department of Ecology _____

The following pertains to the quality assurance (QA) documentation associated with the asbestos analysis by stereomicroscope and polarized light microscopy (PLM) for 11 samples collected at Mountain Home Air Force Base, Mountain Home, Idaho. I conducted the analyses using the EPA Region 10 standard operating procedure for asbestos analysis ASB_001 and EPA method 600/R-93/116.

The following comments refer to the quality control specifications for analysis of the following samples:

EPA Region 10 Sample Number	Sample Station Location	GPS Location
07464300	Phase 6 open trench	N 43° 03.364' W 115° 50.664'
07464301	Phase 6 between Units 14 and 15	N 43° 03.344' W 115° 50.691'
07464302	Entrance to Phase 7	N 43° 03.375' W 115° 50.654'
07464303	Phase 7 sifted rock pile	N 43° 03.444' W 115° 50.617'
07464304	Phase 7 Moss Street rock pile	N 43° 03.566' W 115° 50.580'
07464305	Phase 7 open trench	N 43° 03.641' W 115° 50.591'
07464308	Verlinde Hill Debris Field	N 43° 04.116' W 115° 53.029'
07464309	Verlinde Hill Debris Field	N 43° 04.115' W 115° 53.025'
07464310	Verlinde Hill Debris Field	N 43° 04.114' W 115° 53.029'
07464311	Verlinde Hill Debris Field	N 43° 04.150' W 115° 53.096'
07464312	Verlinde Hill Debris Field	N 43° 04.109' W 115° 53.080'

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

MEMORANDUM

SUBJECT: Data Release for Asbestos Results from the USEPA Region 10 Laboratory.

PROJECT NAME: Mountain Home IG Project

PROJECT CODE: ESD-138B

FROM: Gerald Dodo, Acting Laboratory Director
Office of Environmental Assessment
USEPA Region 10 Laboratory

TO: Andy Hess, Inspector, Environmental Services Unit
Office of Environmental Assessment
USEPA Region 10

Michele Wright, NESHAP Coordinator
USEPA Region 10

J. David Berrett, Special Agent
U.S. DOD Inspector General

Matt Peltier, Special Agent
USAF Office of Special Investigations

Jed Januch, Investigator, Environmental Services Unit
Office of Environmental Assessment
USEPA Region 10

Ellie Hale, Office of Environmental Clean-Up
USEPA Region 10

I have authorized release of this data package. Attached you will find the asbestos results for the Mountain Home IG project for the samples collected on 11/15 & 11/16/2007. For further information regarding the attached data, contact Jed Januch at 360-871-8731.

APPENDIX 4

Table 2. Data Quality Objectives Summary

Analytical Group	Number of Samples	# of QA Samples: Reference Samples	Matrix	Method	Method Detection Limits	Accuracy	Precision (RPD)	Complete-Ness	Volume, Container	Holding Time (days)
				Laboratory Measurements						
Asbestos PLM	14	1 SRM 1866	ACM	EPA/600/R-93/116	1%	+/- 10% [1]	+/- 10% [1]	> 90%	12"X12" Plastic Bag	None
Asbestos by XRD	2	1 SRM 1866	ACM	XRD-QL for Compound Identification	Qualitative – approx. 1%-5%	Qualitative Pattern Match	Qualitative	> 90%	12"X12" Plastic Bag	None
Asbestos by TEM	4	1	Air Filter	NIOSH 7402	< 0.01fibers/cc	+/- 20%	+/- 20%	> 90%	Filter cassette	None
Health and Safety[2]										

1 – Accuracy and Precision for analysis by PLM is dependent on the concentration of asbestos present in the sample. For samples containing > 20% asbestos, the acceptable mean error is suggested in the method is +/- 10%. For samples containing <20% asbestos, the acceptable mean error is suggested in the method to fall between +/- 2%-5%.

2 – Asbestos by TEM will require analysis by a contract laboratory.

5) Completeness: Data are complete when a prescribed percentage of the total intended measurements and samples are obtained. Analytical completeness is defined as the percentage of valid analytical results requested. For this project, acceptable completeness should be > 90%.

D3 – Reconciliation with User Requirements

All data and related information obtained during the course of this project will be included in a data report package

Data validation is an evaluation of the technical usability of the verified data with respect to the planned objectives of the project. Data validation is performed external to the laboratory by applying a defined set of performance criteria to the body of data in the evaluation process.

D2 – Verification and Validation Methods

Data Verification

Data verification will include a review of the findings of all QA assessment activities including:

1) Field Collection Procedures
2) Sample Labeling Methods.
3) Chain-of-Custody Procedures.
4) Assessments of analytical data collection, recording, and reporting.

If any deviations are identified, the potential impact of those deviations on the reliability of the data will be assessed, and the information will be provided to the project manager.

Data Validation

Data validation consists of evaluation of all individual samples collected and analyzed to determine if the results are within acceptable limits. Quantitative or qualitative limits of acceptability are defined for precision, accuracy, representativeness, comparability, and completeness.

1) Precision: It is defined as the agreement between a set of replicate measurements without assumption and knowledge of the true value. Agreement is expressed as either the relative percent difference (RPD) for duplicate measurements or the range and standard deviation for larger numbers of replicates. Data on precision are obtained by analyzing duplicate and replicate samples.

2) Accuracy: Accuracy is a measure of the closeness of a sample analysis result to the "true" value. Accuracy will be determined primarily by an evaluation of the agreement between repeat analyses, both within and between laboratories.

3) Representativeness: Is defined as the degree to which data accurately and precisely represents characteristics of a population, parameter variations at a sampling point, or an environmental condition. For this project, representativeness will be ensured by selection of sampling locations in accordance with the sampling design requirements in this QAPP.

4) Comparability: Data are comparable if collection techniques, measurement procedures, methods, and reporting units are equivalent for the samples within a sample set. Comparable data for this project will be obtained by specifying standard units for physical measurements and standard procedures for sample collection, processing and analysis.

All data generated during this project will be processed, stored, and distributed according to laboratory's SOPs.

C. Assessment and Oversight

C1 - Assessments and Response Actions

Quality assurance (QA) assessments will be conducted during the course of this project. Given the short time frame, only one assessment is planned before completion of the project. The quality assurance assessment performed during this project may include the following:

1) Oversight of field sampling activities.
2) Oversight of sample handling and chain-of-custody procedures.
3) Laboratory Inspections.

Quality assurance assessments will be conducted by the EPA Region 10 quality assurance manager or QA staff delegated by the manager to conduct assessments.

Laboratories routinely perform performance checks using different program specific blind and double blind check standards. Each asbestos method of analysis requires specific QA/QC runs that must be complied with by the laboratory performing the analysis. An internal assessment of the data and results are also routinely conducted by the appropriate supervisors and the Laboratory QA Coordinator. No additional audits will be performed on the laboratory for this project.

Corrective action procedures that might be implemented from QA results or detection of unacceptable data will be developed if required and documented in Attachment 2.

C2 – Reports to Management

If, for any reason, the schedules or procedures above cannot be followed, the project manager shall complete Attachment 2-Sample Alteration Form (SAF). The SAF should be reviewed and approved by the QAO. The laboratory should be given a copy of the QAO approved SAF for reference and project file.

D. Data Validation and Usability

D1 – Data Review, Verification, and Validation

Data Verification

Data verification is a consistent and systematic process that determines whether the data have been collected in accordance with the QAPP.

Data Validation

Field Instruments

Field instruments including personal air monitors and an intermediate calibration standard will be maintained according to the manufacturers' instructions and applicable SOP's. Records for equipment service shall be maintained by the OEA field team.

Lab Instruments

Laboratory instruments such as microscopes, X-ray diffractometer, and other equipment required by the applicable analytical methods will be maintained according to the manufacturers' instructions and the laboratory SOP's. Records for equipment service shall be maintained by the laboratory.

B7 – Instrument/Equipment Calibration and Frequency

Field Instruments

Field instruments are calibrated using the method and frequency specified by field SOP's. Records pertaining to the calibration of field equipment shall be maintained by the OEA field team.

Laboratory Instruments

Laboratory equipment will be calibrated using the method and frequency specified in the laboratory SOP's. Records on calibration of laboratory equipment shall be maintained by the laboratory.

B8 – Inspection/Acceptance of Consumable Supplies

Consumable supplies in the field will consist primarily of plastic sample bags. Consumable supplies in the laboratory will consist of reagents and SRM's. The quality of reagents and SRM's used for this project should be documented by the supplier and certificates should be available to EPA on request.

B9 – Non-Direct Measurements

Non-direct measurements may be acquired through review of previous sampling and analysis activities. These types of data may be used for planning purposes for this project. The data acquired through non-direct measurement should be reviewed by the EPA QA office to ensure it meets minimum standards and acceptance criteria.

B10 – Data Management

A field log notebook, photos, and the Field Sample and Chain-of-Custody Data Sheets will be used to document the sampling activities. The Field Sample and Chain-of-Custody Data Sheets will have the following information: site name, sample number, date and time of each sample collection, and the sampler's name or initials.

B5 – Quality Control

The following QC activities will be performed by the laboratory performing analytical services in support of this project.

Samples Analyzed by PLM

Negative Controls - A blank slide must be prepared before analysis of each set of samples. A sample of isotropic non-asbestos material such as fiberglass (SRM 1866a) should be mounted in a drop of refractive index liquid on a clean slide. Preparation tools including forceps and dissecting needle should be rubbed in the drop of liquid and a clean cover slip should be placed on the drop. The entire area under the cover slip should be scanned by PLM to detect asbestos fiber contamination. If asbestos fibers are detected, the test should be repeated using a clean slide and cleaned preparation tools. If asbestos fibers are still found, have the refractive index fluid checked and replace if needed.

Duplicate Analysis (intra- & inter-analyst precision) - The analyst will perform 2 independent measurements at a frequency of 1 out of every 10 samples to determine the ability of the analyst to repeat a measurement. At least 1 out of every 10 samples should be re-analyzed by another analyst.

Reference Sample Analysis - The analyst will perform analysis of a material with a known concentration of asbestos (National Institute of Standards and Technology (NIST) SRM 1866b).

Precision and Accuracy - For PLM analysis, the precision and accuracy should be measured according to the procedures in Section 2.2.4 of Method EPA/600/R-93/116. The laboratory should demonstrate analyst accuracy according to the guidelines set forth by NIST.[1] At least 30% of the quality control samples analyzed should contain between 1% and 10% asbestos.

Analysis by XRD

Reference Sample Analysis - The analyst will perform analysis of a material with a known concentration of chrysotile asbestos (NIST SRM 1866b).

Precision and Accuracy - At the beginning of the project, the diffractometer's goniometer alignment will be verified with the NIST SRM 1976, a flat plate of sintered alumina (corundum) provided by the National Institute of Standards and Technology. At the beginning of each day of data collection, the alignment of the goniometer and stability of the X-ray intensity will be checked by measuring the position and peak height of the 3.34 Å (101) peak of a novaculite (fine-grained quartz) reference plate.

B6 – Instrument/Equipment Testing, Inspection, and Maintenance

1 Guide for Quality Control on the Qualitative and Quantitative Analysis of Bulk Asbestos Samples. Version 1. NISTIR 5951.

B2- Sampling Methods

The collection of environmental samples for this project will be done in accordance with applicable EPA standard operating procedures and the sections of appropriate analytical methods that address sample collection.

Grab samples will be collected and deposited in new/clean plastic "ziplock" bags. Sample bags will be identified by writing, with permanent ink marker, the name of the site, sample number, date and time of collection, and the analysis requested on the surface of the bag. At least seven samples will be collected at the demolition sites and seven samples will be collected at the Verlinde Hill Debris Field. The final number of samples collected will depend on the conditions encountered at the time of sampling.

Health and Safety

When working with potentially hazardous materials, investigators are to follow USEPA, OSHA and site specific health and safety procedures. The level of personal protection indicated for sampling activities at this site based on the most current information is **Level C**. Personal Air monitors will be used during collection of the grab samples

B3 – Sample Handling and Custody

Each sample will be identified with a unique sample number assigned by the RSCC. EPA Region 10 chain-of-custody procedures and forms will be used. Custody seals will be placed on all sample containers during transit to the laboratory. Samples will be hand-delivered to the EPA Region 10 Laboratory.

B4 – Analytical Methods

The samples will be analyzed by stereo and polarized light microscopy (PLM) and X-ray diffraction (XRD). The PLM analysis will be done by the EPA method EPA/600/R-93/116 entitled: Test Method for the Determination of Asbestos in Bulk Building Materials or equivalent. The detection limit for this method is generally 1% asbestos by weight.

Analysis by XRD will be done using Method XRD-QL for Compound Identification by X-ray Diffraction Analysis (USEPA Manchester Laboratory). A Scintag X1 X-ray diffractometer will be used to acquire diffraction data with Co$K\alpha$ radiation. Mineral identification will be made by comparison with reference samples and the Powder Diffraction File maintained by the International Centre for Diffraction Data (ICDD, 2002) and other peer-reviewed sources of data.

The abundance of each phase identified by XRD is qualitatively reported as major, minor, or trace amounts based on the intensity of diagnostic diffraction peaks and consideration of X-ray absorption characteristics. Corresponding numerical values are approximately greater than 20% by weight for major, 5-20% for minor, and less than 5% for trace amounts. The detection limit is approximately 1-5%.

Primary Objective – Determine the source and the extent of asbestos contamination at military housing demolition sites at Mountain Home AFB and the Verlinde Hill Debris Field.

A8 – Special Training and Certification

The field staff conducting this study has completed at minimum the 40-hour training in Basic Health and Safety, completed respirator fit testing, and are enrolled in medical monitoring. In addition, they have completed an 8-hour health and safety training refresher course within the last year and first aid and CPR.

A9 – Documents and Records

It will be the responsibility of the QA officer to ensure that appropriate project personnel have the most current approved version of the QAPP including updates. The final version of the QAPP and any updates will be distributed in portable document file format.

Field documentation may include but are not limited to field notes, photographs, and sample data and chain-of –custody forms. Laboratory documentation may include but is not limited to raw data, sample preparation and analysis logs, and results of calibration and quality control (QC) checks.

The field and laboratory documentation will be kept in a case file and submitted to the Superfund Program with the final report. The following documents will be archived at the laboratory: (1) signed hard copies of sampling and chain-of-custody records (2) electronic and hard copy of analytical data. The laboratory will store all sample receipt, sample login, and laboratory instrument documentation for a minimum of seven years.

B. Data Generation and Acquisition

The elements in Sections B1-B10 are designed to ensure that appropriate methods for sampling, measurement and analysis, data collection, data handling, and quality control (QC) activities are employed and documented:

B1 – Sampling Process Design (Experimental Design)

The types of samples collected during this project will consist of grab samples of asbestos containing material from the surface and below ground surface at Mountain Home AFB. The measurement parameter of interest is asbestos (primarily chrysotile and crocidolite). The proposed sampling locations include the following:

1) Military Base Housing demolition sites
2) Verlinde Hill Debris Field

A6 – Project Task Description

Document the presence of asbestos containing materials (specifically cement asbestos pipe) at demolition sites and at the Verlinde Hill Debris Field. The basic field and analytical tasks required to achieve the objective are listed below

1) Collect grab samples (at least seven at the demolition sites and seven at the Verlinde Hill Debris Field) of asbestos containing materials.
2) Analyze the samples by polarized light microscopy (PLM) to document the amount of asbestos present in the materials. At least two samples will be analyzed by X-ray diffraction (XRD).
3) Monitor the health and safety of the field team by collecting at least four personal air monitoring samples for analysis by transmission electron microscopy (TEM).

The quality assurance (QA) requirements described in this document are critical to the success of this project are derived from EPA QA/R-5 EPA Requirements for Quality Assurance Project Plans (March 2001).

Table 1 includes a schedule for conducting tasks related to this project. It is intended as a guideline only as it is possible that unforeseen circumstances and conditions will require adjustment to some or all of the following dates that have been proposed.

Table 1. Schedule of Tasks

Activity	Estimated Start Date	Estimated Completion Date	Comments
Asbestos Site-Specific QAPP Review/Approval	November 13, 2007	November 14, 2007	
Sample Collection	November 15, 2007	November 16, 2007	
Laboratory Receipt of Samples	November 19, 2007	November 19, 2007	
Laboratory Analysis	November 26, 2007	December 26, 2007	
Data Verification	December 26, 2007	January 4, 2008	

A7 – Quality Objectives and Criteria

Data from this project will be used to determine compliance with the Clean Air Act (asbestos NESHAP) and other applicable environmental laws and regulations.

Location

The demolition sites are located on the northeast corner of the facility (Latitude 43° 06' 044" North, Longitude 115° 84' 921" West). The Verlinde Hills Debris Field is located on the northwest corner of the facility (Latitude 43° 06' 906" North, Longitude 115° 88' 370" West).

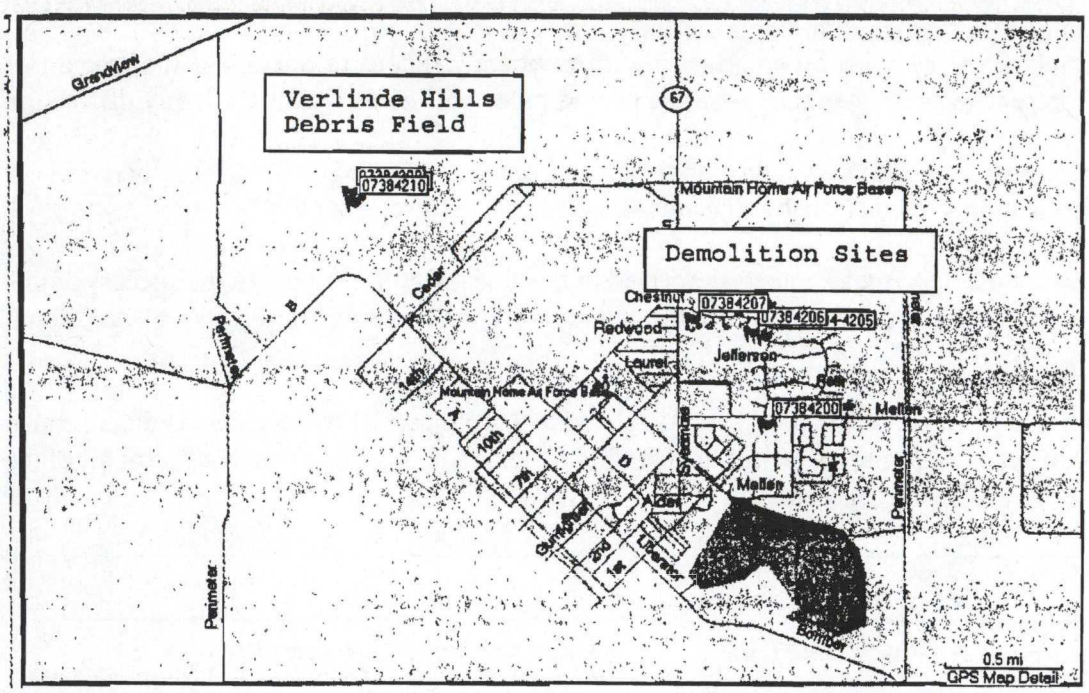


Figure 1 – Sample Locations at Mountain Home AFB from September 18, 2007 visit.

Problem Definition

Fragments of cement asbestos pipe have been observed on the surface of the ground at demolition sites and at the Verlinde Hills Debris Field at Mountain Home AFB. The source of the fragments of cement asbestos pipe needs to be determined. In addition, the amount of cement asbestos pipe remaining on the surface and below ground surface at the Verlinde Hills Debris Field needs to be determined. The construction debris including concrete and cement asbestos pipe was transported Verlinde Hills Debris Field by dump truck. The piles of material dumped by the trucks were flattened out with a bull dozer. The cement asbestos pipe observed on the surface of the ground at the Verlinde Hills Debris Field will likely be found below the ground surface as well and overtime may be exposed to mechanical disturbance and weathering which may release asbestos fibers into the air.

A. Project Management

A3 - Distribution List

Copies of the completed/signed project plan should be distributed to:

Jed Januch, Investigator	LAB
Bethany Plewe, RSCC	OEA-095
Don Matheny, QA Officer	OEA-095

Electronic copies of data are **not** required unless specifically requested.

At the conclusion of analysis, hard copies of data should be provided to:

Jed Januch, Investigator	LAB
Michele Wright, EPA Region 10 NESHAP Coordinator	LAB

A4 - Project/ Task Organization

The following individuals are EPA staff with responsibility for design and implementation of this project, and will be the primary data users and decision makers:

- **Jed Januch,** (360) 871-8731, Investigator responsible for preparation of the quality assurance project plan (QAPP), collecting samples, analysis of samples, and preparation of the final report.
- Don Matheny, (206) 553-2599, QA Officer responsible for assisting the Investigator in the development of the QA Project Plan (QAPP), subsequent revisions, and amendments.
- **Bethany Plewe,** (206) 553-1603, Regional Sample Control Coordinator (RSCC) residing in the QA Office, coordinates sample analyses performed by MEL. The RSCC will provide sample numbers for samples that will be analyzed at the MEL.

A5 - Problem Definition/Background

During a site visit on September 18, 2007, EPA investigators observed numerous fragments of cement asbestos pipe at military housing demolition sites and the Verlinde Hill Debris Field at Mountain Home Air Force Base (AFB). Samples collected and analyzed by EPA were found to contain chrysotile asbestos and crocidolite asbestos (asbestiform riebeckite). The source of the cement asbestos pipe fragments is unknown and the amount of cement asbestos pipe fragments above and below the ground surface at the Verlinde Hill Debris Field is unknown.

TABLE OF CONTENTS

QUALITY ASSURANCE PROJECT PLAN (QAPP)

FOR

Asbestos Sampling and Analysis Mountain Home Air Force Base Mountain Home, Idaho

Date: November 13, 2007
Revision: 1.0

APPROVAL OF QAPP:

_____ **Date:** _____

Keven McDermott, Manager
Investigation and Engineering Unit
Office of Environmental Assessment

RA for _____ **Date:** 11-14-07

Roy Araki, QA Manager
Office of Environmental Assessment (OEA)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

November 14, 2007

Reply To
Attn. Of: **OEA-095**

MEMORANDUM

SUBJECT: Review of Quality Assurance Project Plan for Asbestos Sampling and Analysis Mountain Home Air Force Base, Mountain Home, Idaho, EPA Region 10 Office of Environmental Assessment, November, 2008

FROM: Donald Matheny, Chemist DM
Environmental Service Unit, Office of Environmental Assessment

TO: Jed Januch, Senior Investigator
Office of Environmental Assessment (LAB)

I've completed a review of the above Plan. No deficiencies were noted and overall approval is recommended. If you have any questions, please call me at (206)553-2599.

APPENDIX 3

Mountain Home Air Force Base
Photographs
November 15, 2007

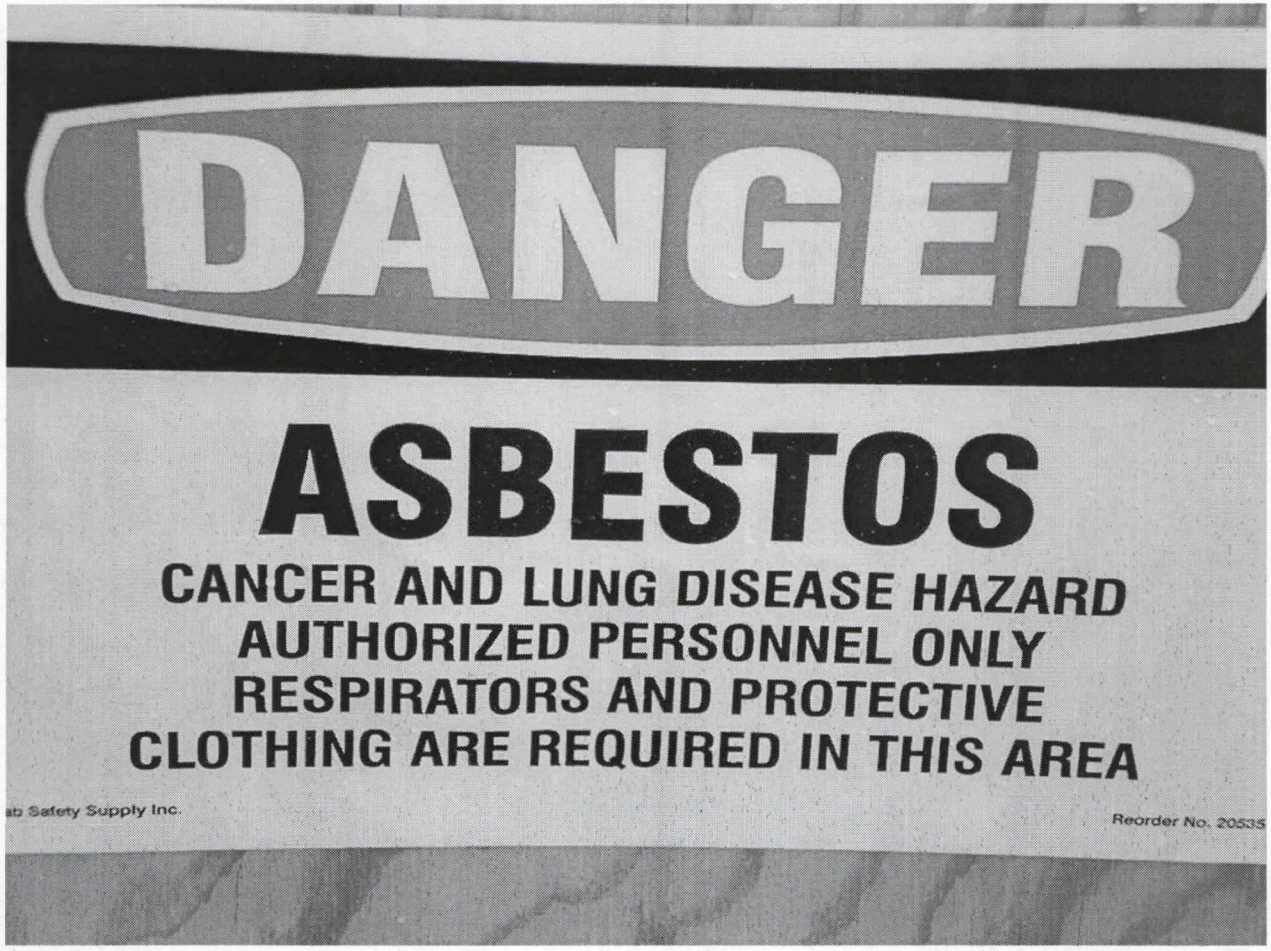


Photo 32: Sign at Verlinde Hills rubble pile – see Photo 30

Mountain Home Air Force Base
Photographs
November 15, 2007

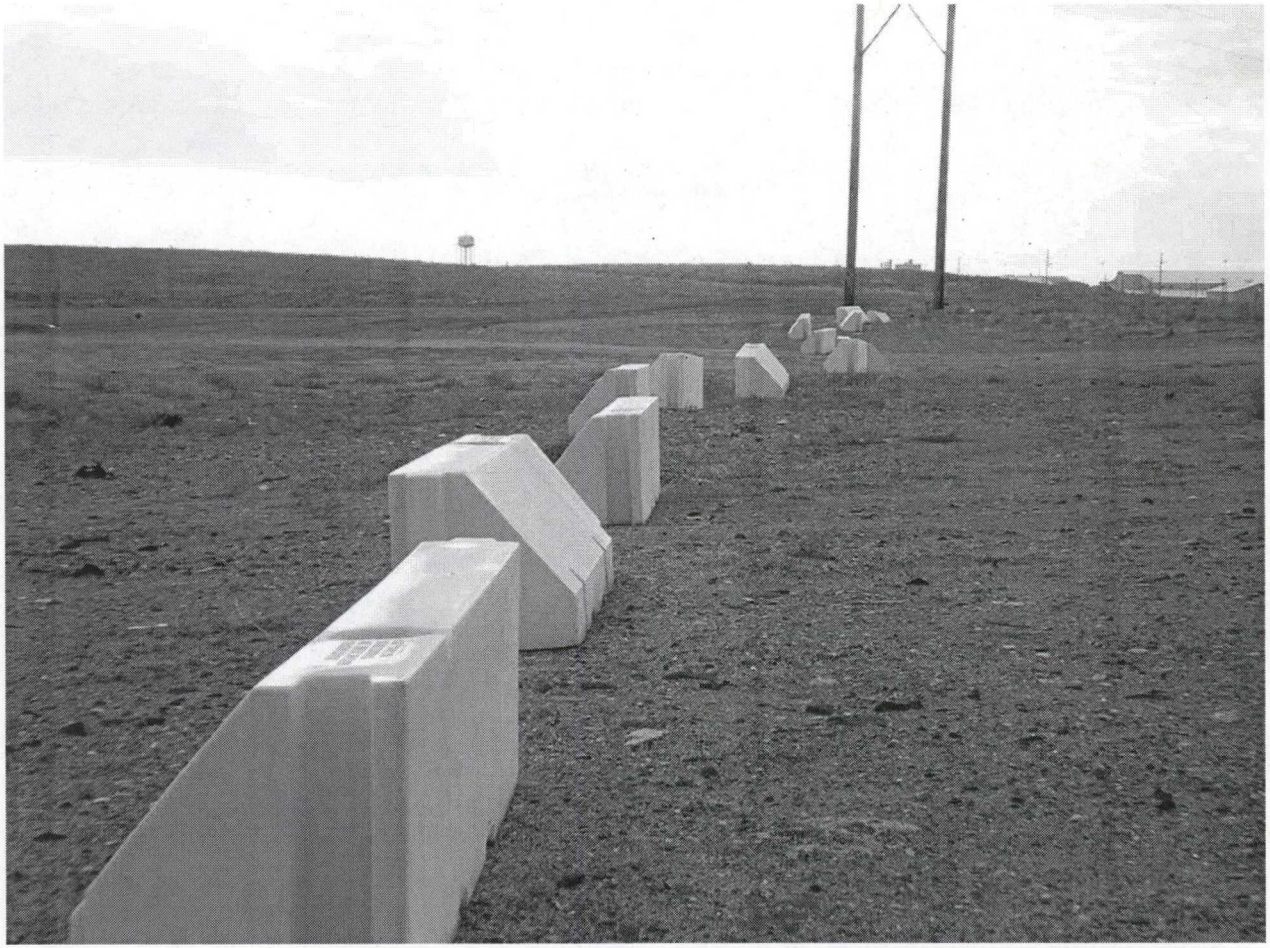


Photo 31: Barriers preventing entry to portion of Verlinde Hills rubble pile – rubble containing probable transite pipe from Phase 6 & 7 disposed in this area

Mountain Home Air Force Base
Photographs
November 15, 2007

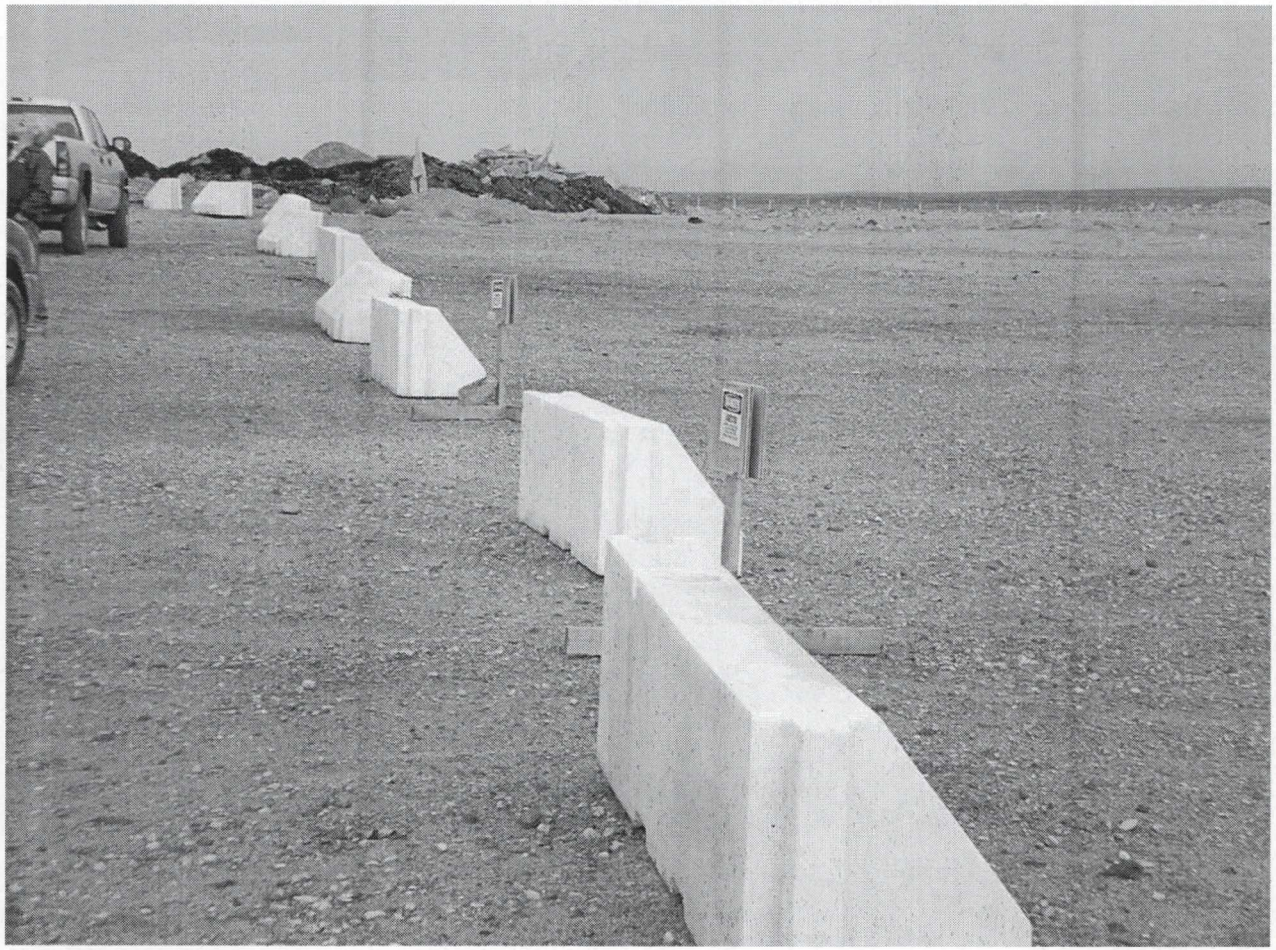


Photo 30: Barriers preventing entry to portion of Verlinde Hills rubble pile – rubble containing probable transite pipe from Phase 6 & 7 disposed in this area

Mountain Home Air Force Base
Photographs
November 15, 2007

Photo 29: Verlinde Hills rubble pile – looking east – note large area of rubble which appeared to have been recently placed

Mountain Home Air Force Base
Photographs
November 15, 2007

Photo 28: Screener for separating rubble from soil – separated rubble in center of photo

Mountain Home Air Force Base
Photographs
November 15, 2007

Photo 27: Screener used to separate dirt from rubble – located near north side of Phase 6 and south side of Phase 7

Mountain Home Air Force Base
Photographs
November 15, 2007

Photo 26: Fine dirt removed from rubble by shaker bucket

Mountain Home Air Force Base
Photographs
November 15, 2007

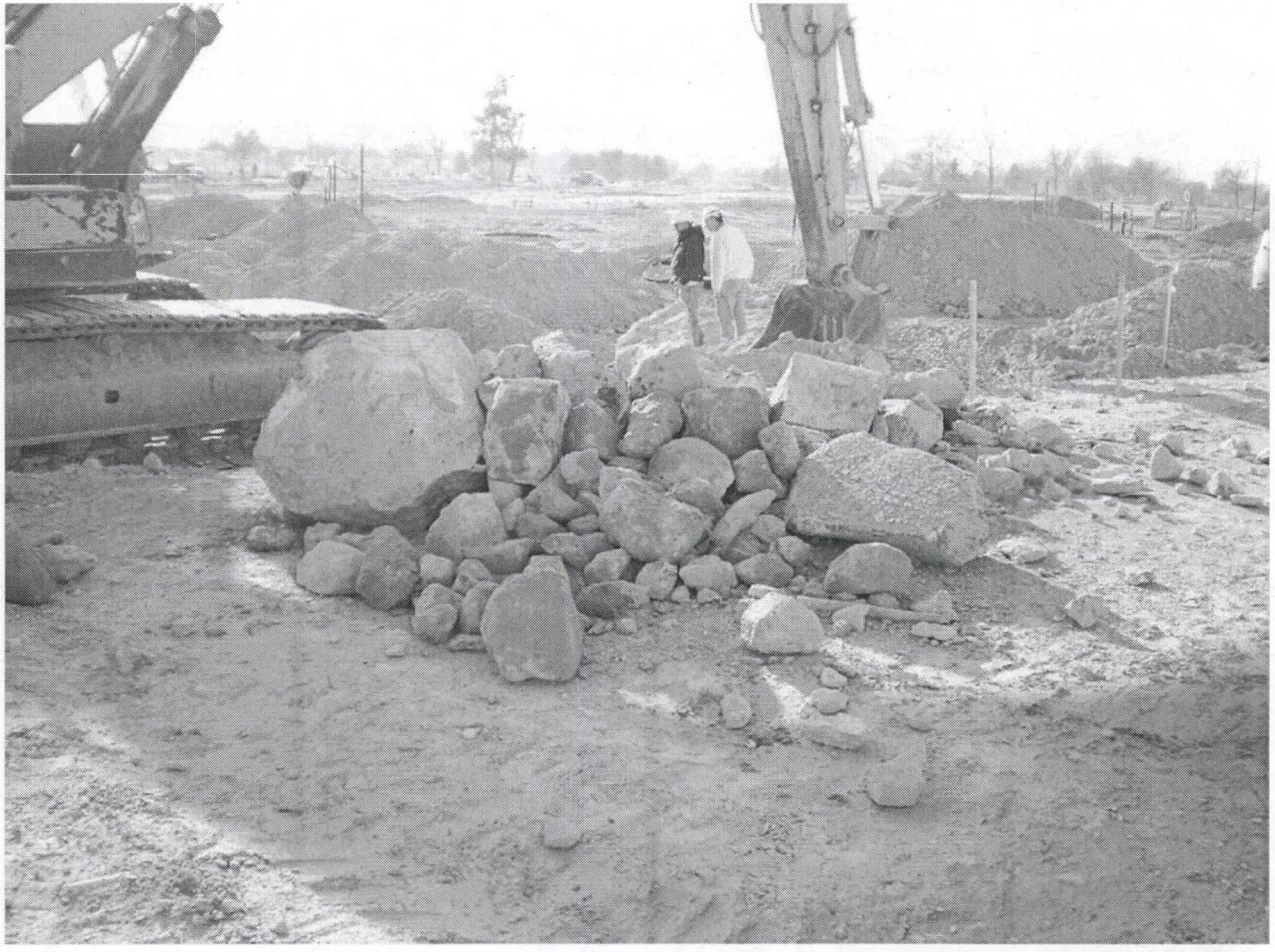


Photo 25: Rubble pile near south end of Phase 7 and north end of Phase 6- rubble had been processed through shaker bucket – transite pipe fragments observed in pile

Mountain Home Air Force Base
Photographs
November 15, 2007

Photo 24: Probable transite pipe in rubble pile near south end of Phase 7 and north end of Phase 6- rubble had been processed through shaker bucket – transite was not marked for removal

Mountain Home Air Force Base
Photographs
November 15, 2007

Photo 23: Probable transite pipe in rubble pile near south end of Phase 7 and north end of Phase 6- rubble had been processed through shaker bucket – transite was not marked for removal

Mountain Home Air Force Base
Photographs
November 15, 2007

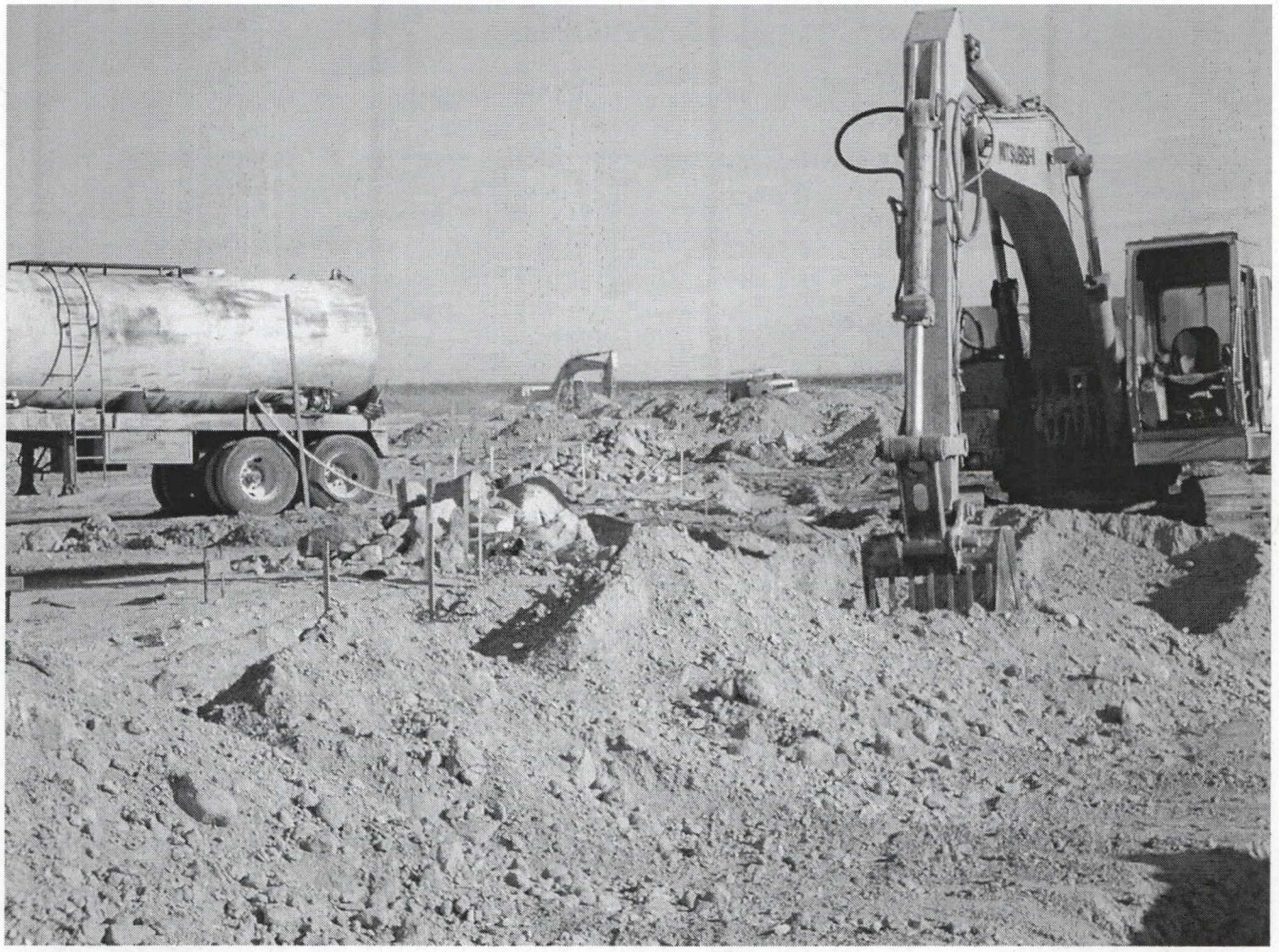


Photo 22: Example trenching operation in Phase 7 – note shaker bucket on excavator

Mountain Home Air Force Base
Photographs
November 15, 2007

Photo 21: Probable transite pipe fragment – unmarked – adjacent to trench in Phase 7

Mountain Home Air Force Base
Photographs
November 15, 2007

Photo 20: Probable transite pipe fragments – unmarked – in Phase 7 under excavator tracks

Mountain Home Air Force Base
Photographs
November 15, 2007

Photo 19: Probable transite pipe that had been broken and that extended parallel to trench in Phase 7

Mountain Home Air Force Base
Photographs
November 15, 2007

Photo 18: Probable transite pipe in Phase 7 marked with spray paint on soil near house foundation and trenches

Mountain Home Air Force Base
Photographs
November 15, 2007

Photo 17: Probable transite pipe in Phase 7 marked with spray paint on soil

Mountain Home Air Force Base
Photographs
November 15, 2007

Photo 16: Probable transite pipe in Phase 7 marked with spray paint on soil

Mountain Home Air Force Base
Photographs
November 15, 2007

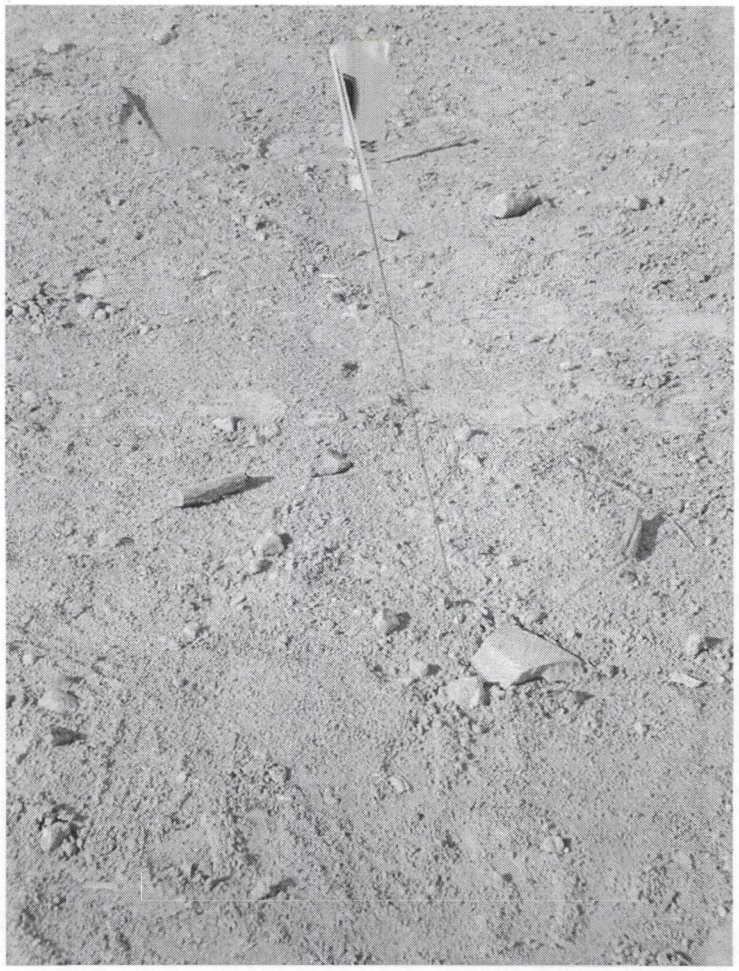


Photo 15: Example of probable transite pipe marked with flag – was under construction worker's truck – contractor moved truck

Mountain Home Air Force Base
Photographs
November 15, 2007

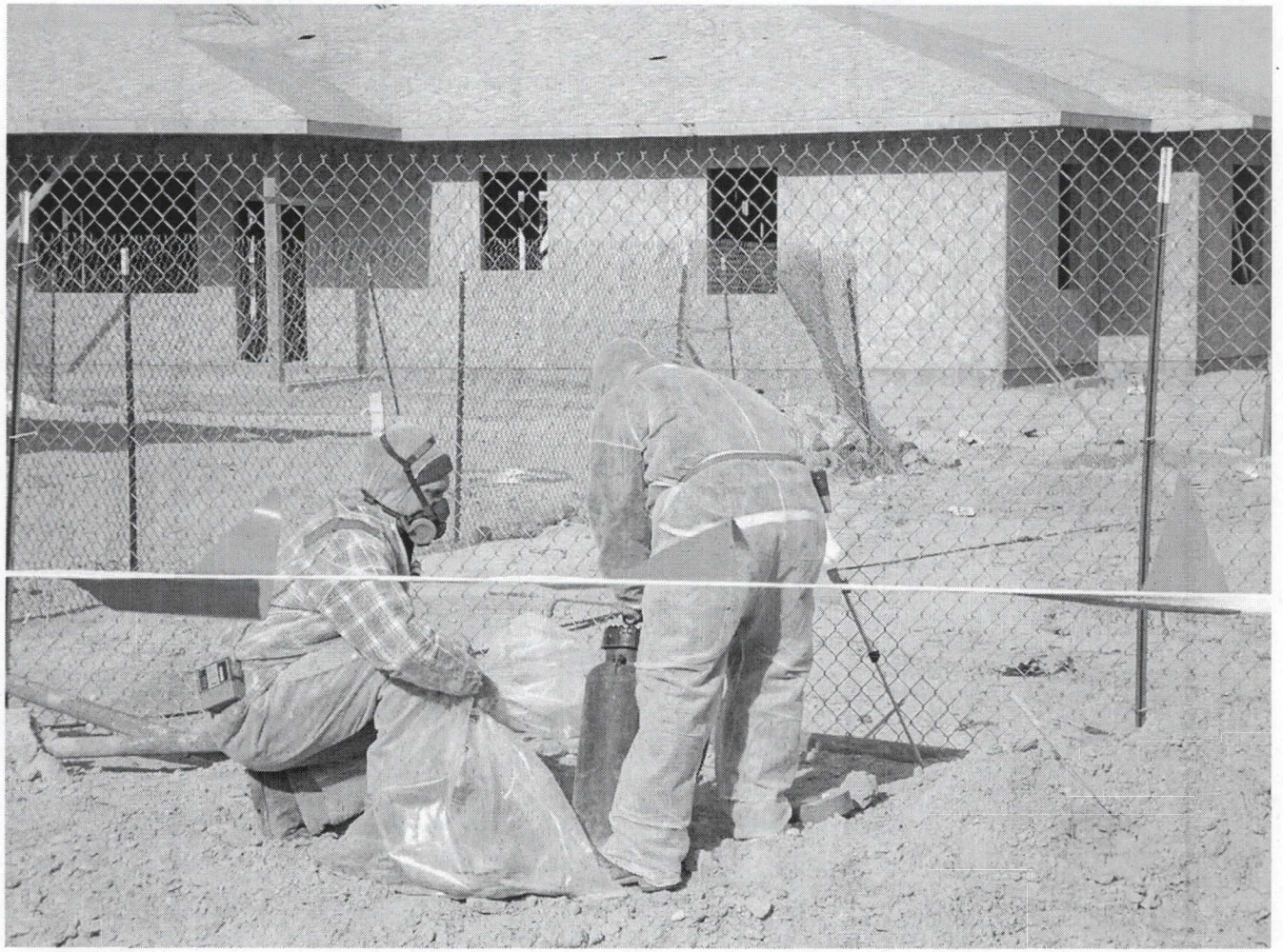


Photo 14: AAI employees picking up probable asbestos pipe

Mountain Home Air Force Base
Photographs
November 15, 2007

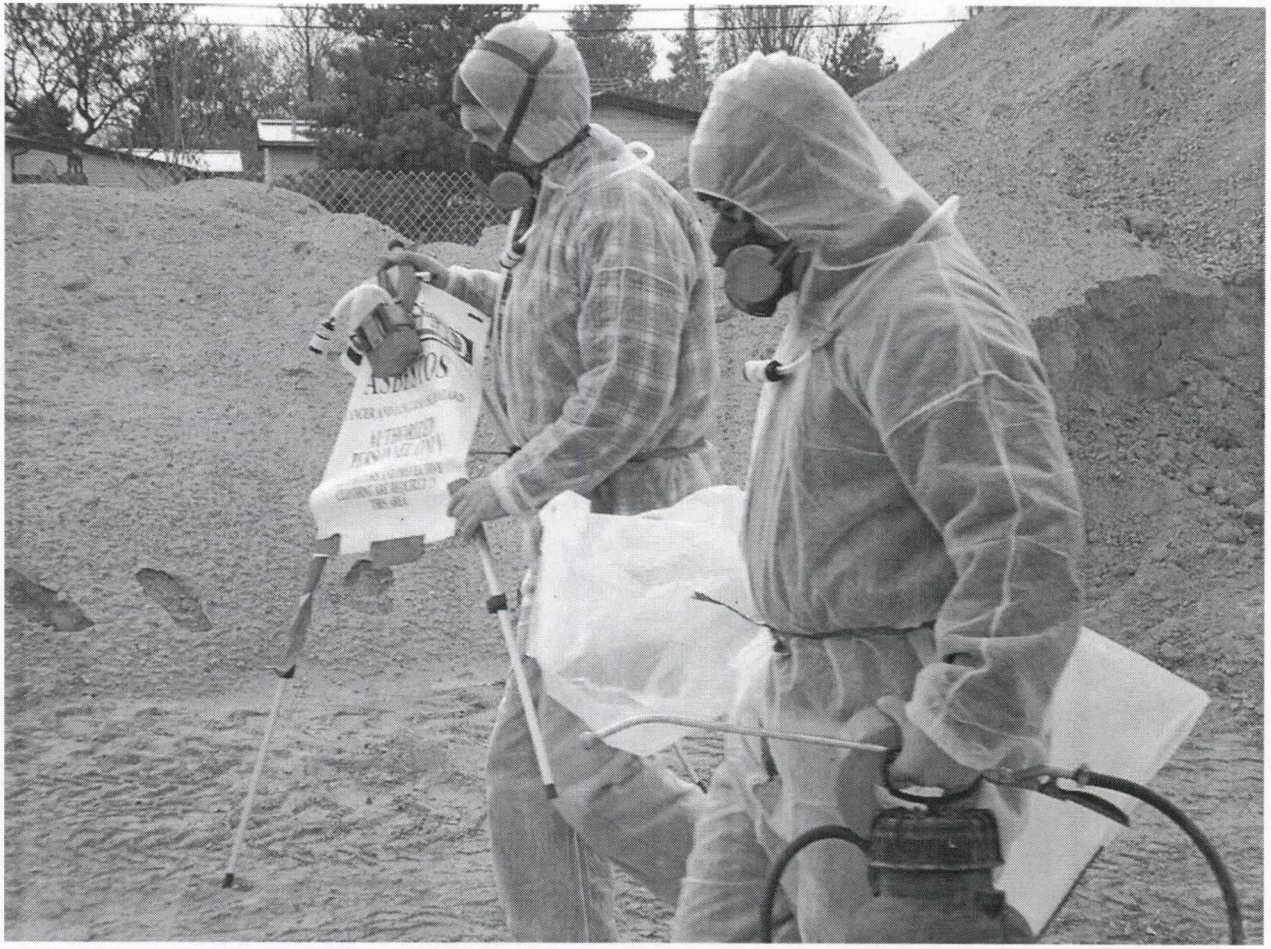


Photo 13: AAI employees picking up probable transite pipe – note warning sign and lack of gloves

Mountain Home Air Force Base
Photographs
November 15, 2007

Photo 12: Fragment of probable transite pipe – had not been identified or located by MHAFB, USCOE, Parsons Evergreene, IHR or AAI employees

Mountain Home Air Force Base
Photographs
November 15, 2007

Photo 11: Note tripod warning of asbestos in the area and "authorized personnel only – fragment of probable transite pipe in the foreground – note lack of bootees

Mountain Home Air Force Base
Photographs
November 15, 2007

Photo 10: AAI employee wetting probable transite pipe – note flag marking pipe, tripod with sign warning asbestos is present in the area

Mountain Home Air Force Base
Photographs
November 15, 2007

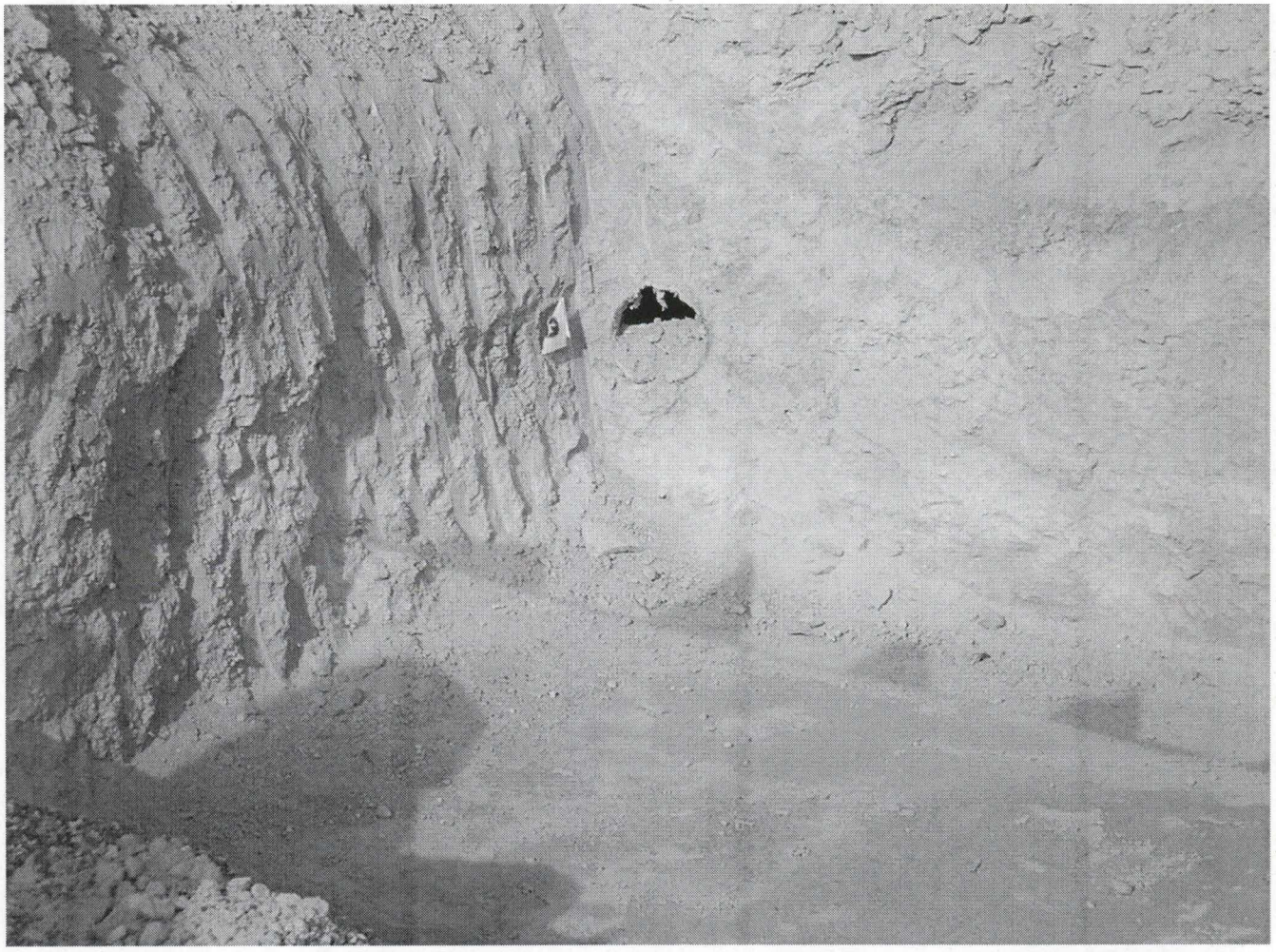


Photo 9: Probable transite pipe (see Photo 8) extending out of side wall of excavation – note pipe fragment below pipe

Mountain Home Air Force Base
Photographs
November 15, 2007

Photo 8: Excavation in Phase 6 – note probable transite pipe extending out of back wall of excavation, near left side of photo

Mountain Home Air Force Base
Photographs
November 15, 2007

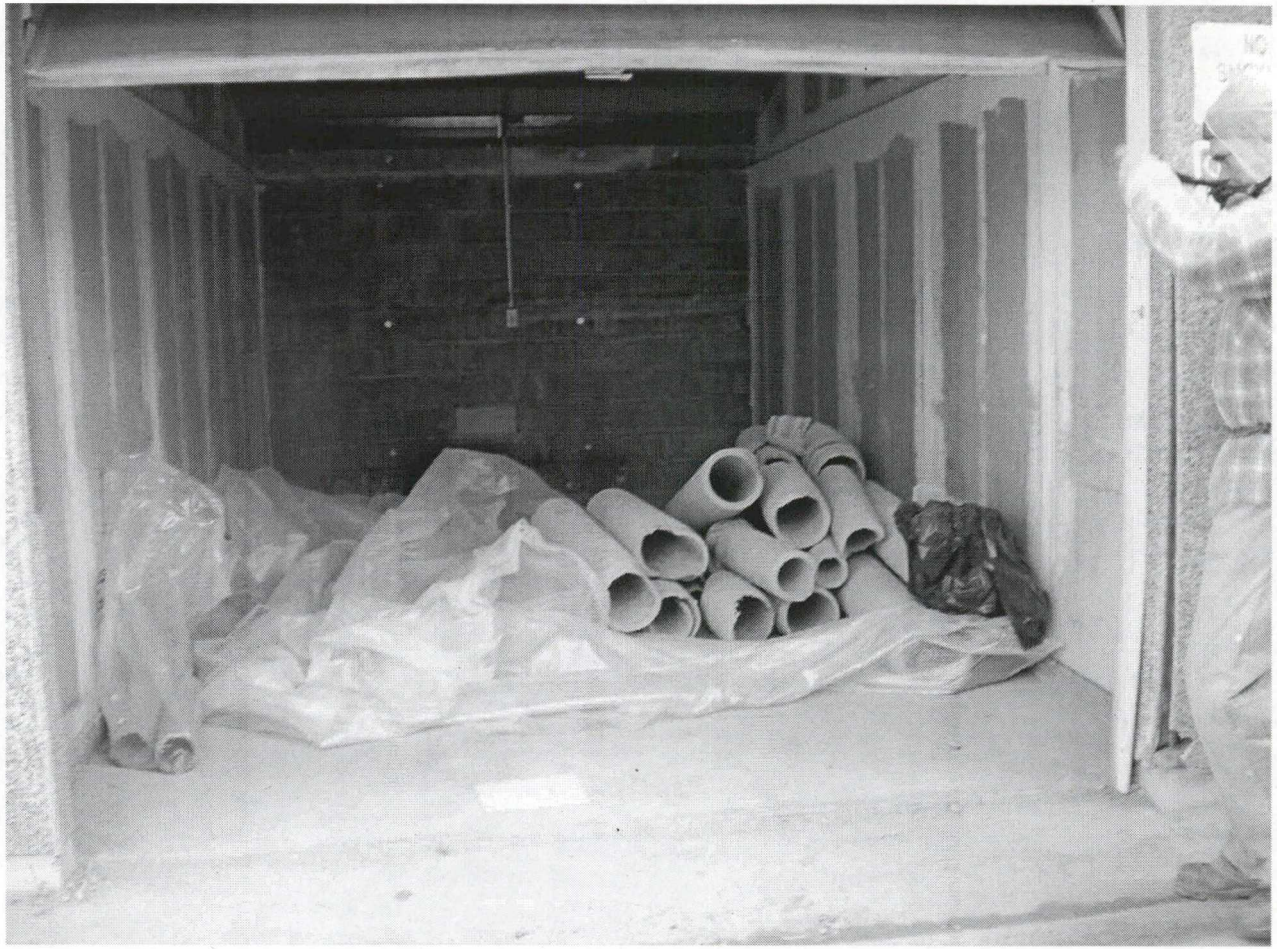


Photo 7: Broken probable transite pipe on plastic, but uncovered, inside "Unit D" – pipe was not covered when unit was opened – note worker from AAI putting on respirator

Mountain Home Air Force Base
Photographs
November 15, 2007

Photo 6: Signage on trailer used to transport transite pipe – trailer is also shown in Photos 3 & 4

Mountain Home Air Force Base
Photographs
November 15, 2007

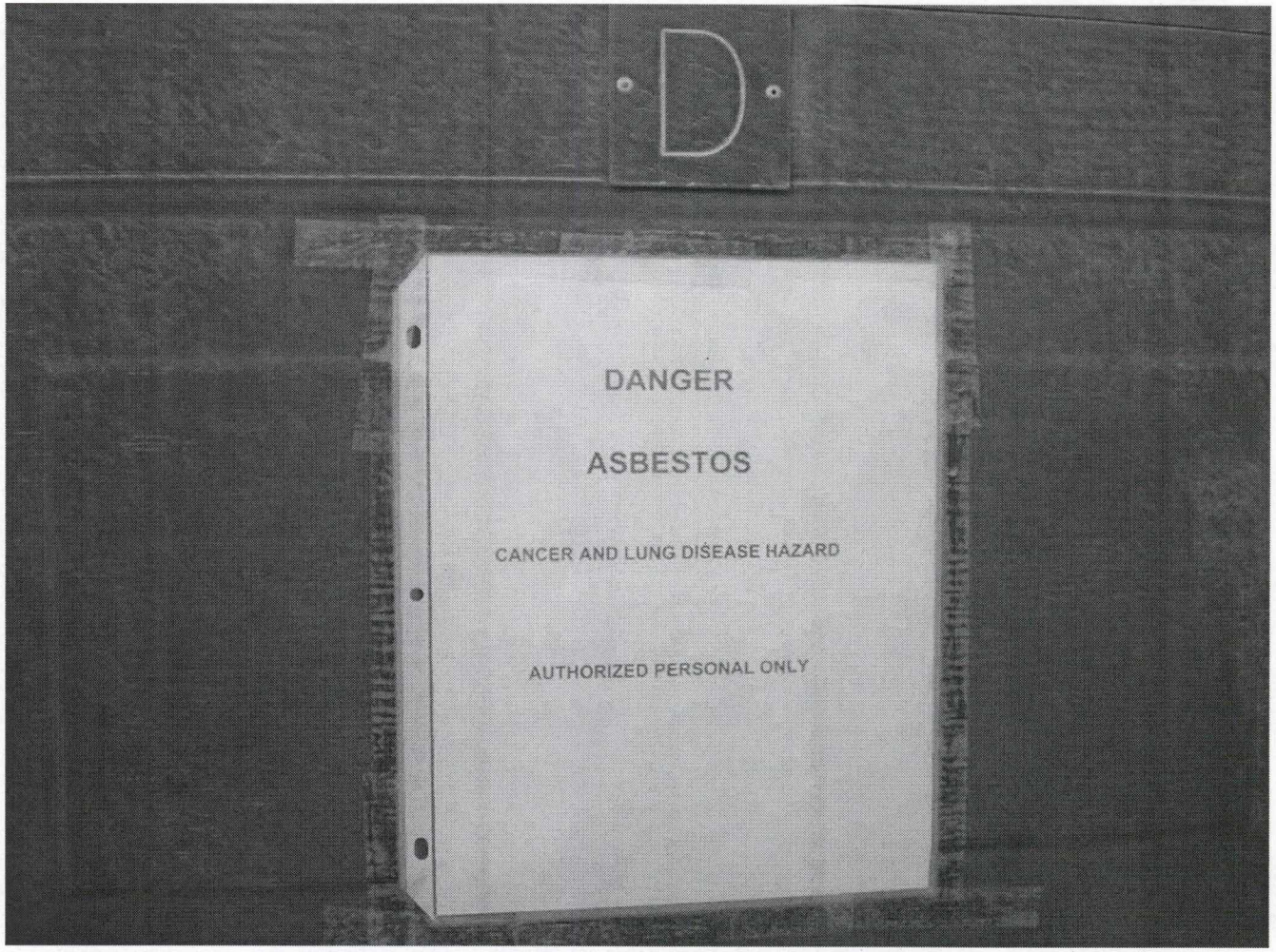


Photo 5: Signage on closed overhead door on storage unit near Parsons-Evergreene contractor office – "Unit D"

Mountain Home Air Force Base
Photographs
November 15, 2007

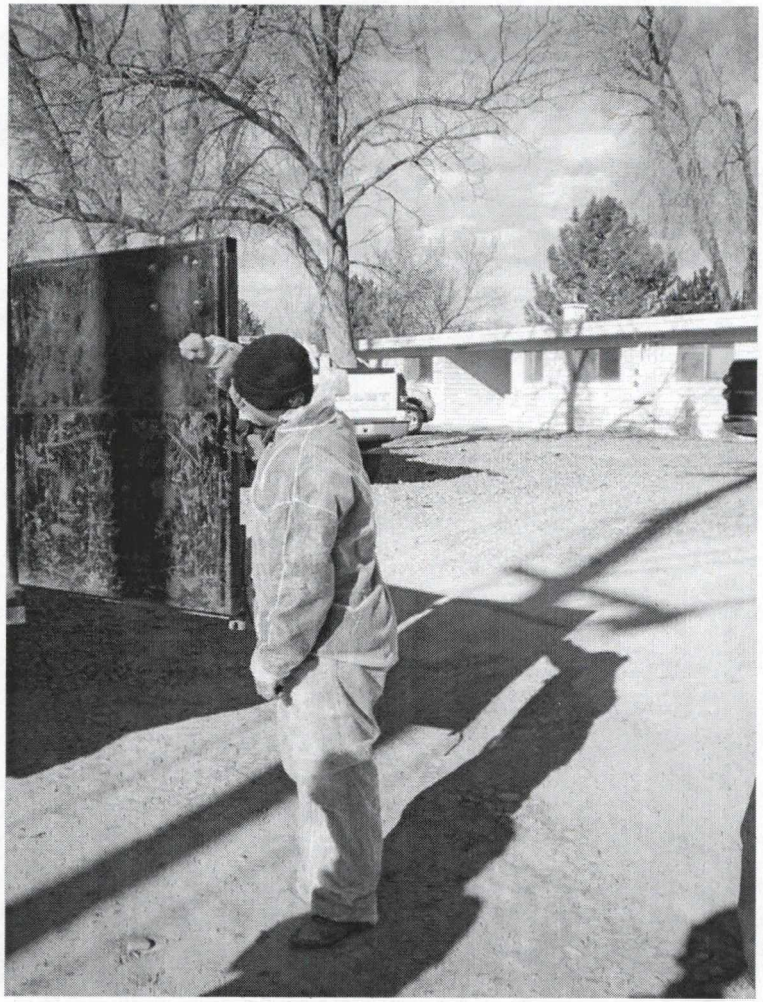


Photo 4: AAI employees standing adjacent to back of truck

Mountain Home Air Force Base
Photographs
November 15, 2007

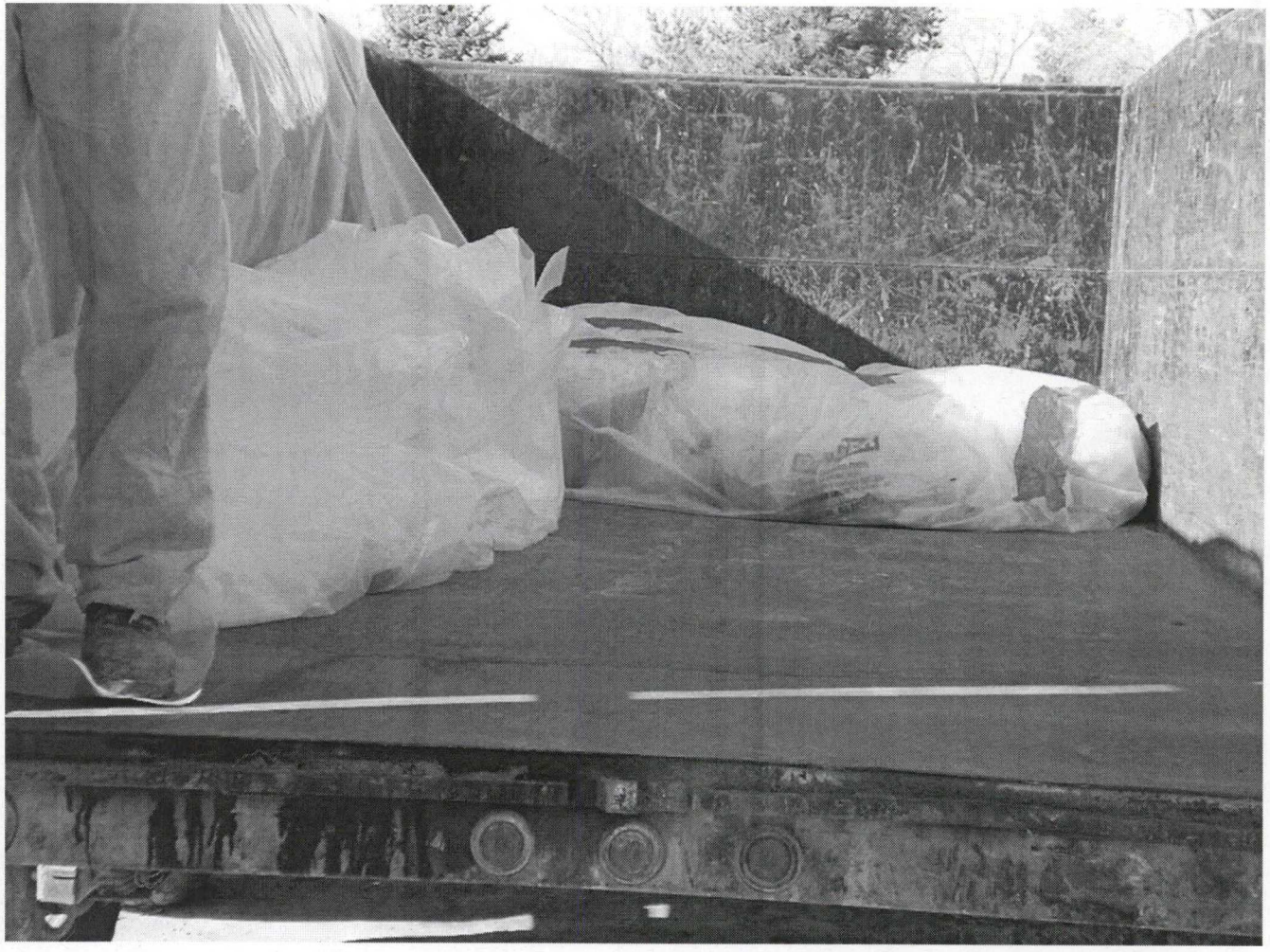


Photo 3: Plastic wrapped transite (asbestos containing) pipe in back of truck near Hunt office in Phase 7

Mountain Home Air Force Base
Photographs
November 15, 2007

Photo 2: Trencher in Phase 7 construction area

Mountain Home Air Force Base
Photographs
November 15, 2007

Photo 1: North boundary of Phase 7 – Fugitive dust was leaving boundary of construction area and drifting into housing area

APPENDIX 2

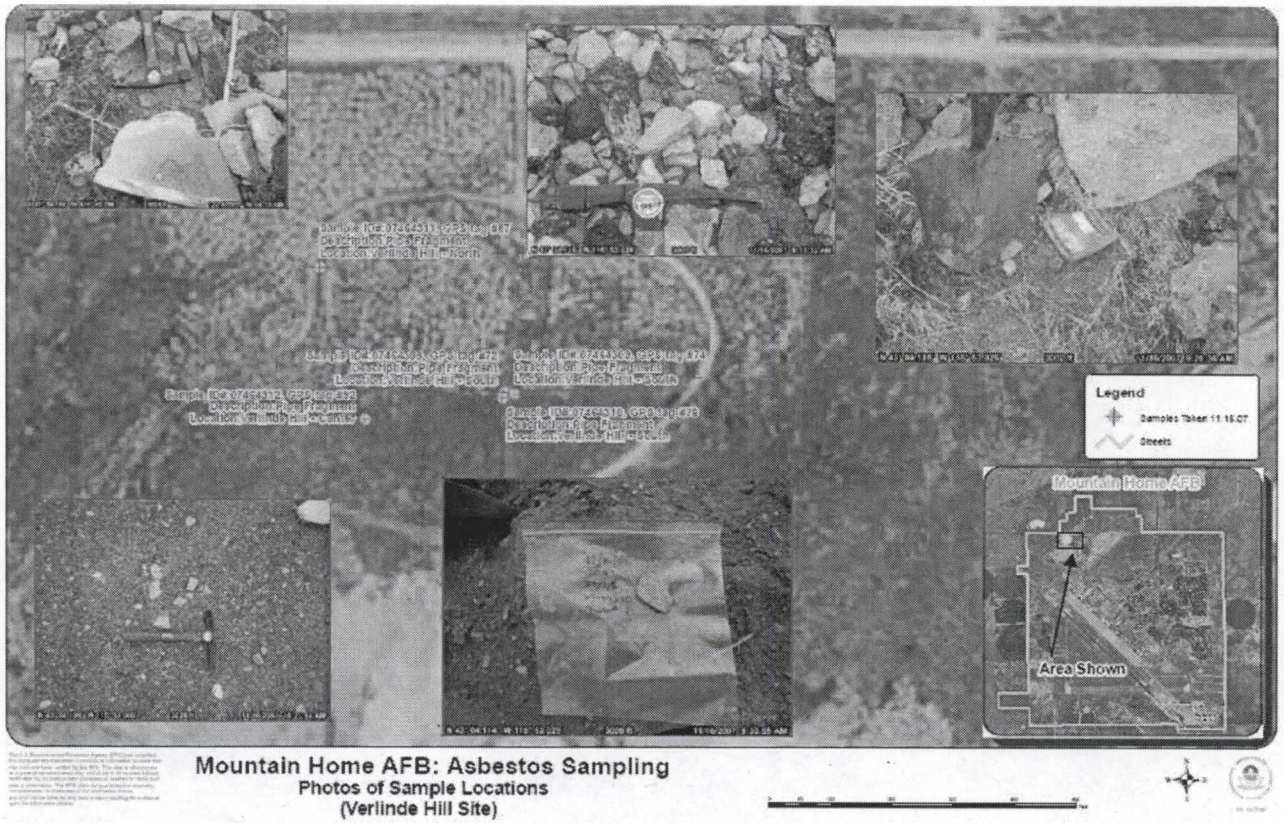

Legend
Samples Taken 11.15.07
Streets
Mountain Home AFB
Area Shown
Mountain Home AFB: Asbestos Sampling
Photos of Sample Locations
(Verlinde Hill Site)

Figure 45

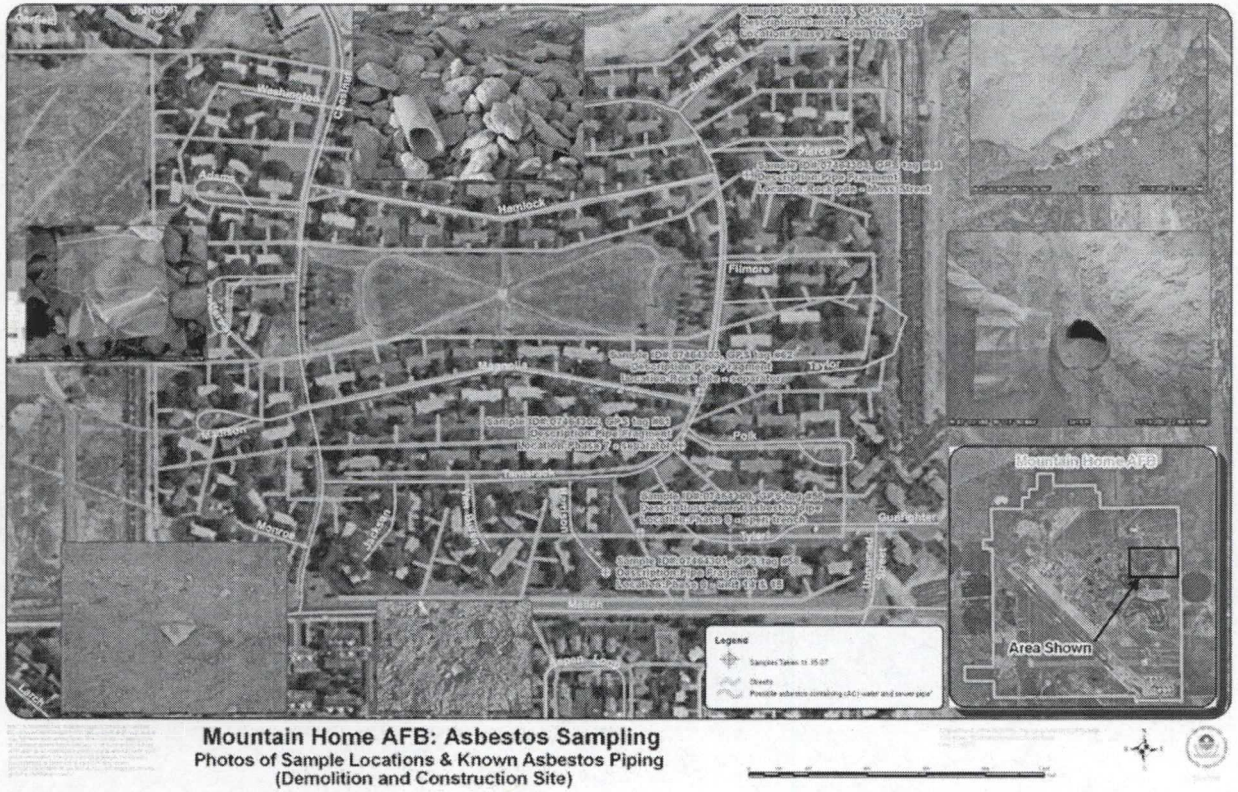

Hamlock
Filmore
Taylor
Polk
Monroe
Jackson
Madison
Quarles
Mountain Home AFB
Area Shown
Legend
Mountain Home AFB: Asbestos Sampling
Photos of Sample Locations & Known Asbestos Piping
(Demolition and Construction Site)

Figure 44


Legend
Area Shown
Mountain Home AFB: Asbestos Sampling
Locations of Georeferenced Photos
(Verlinde Hill Site)

Figure 43

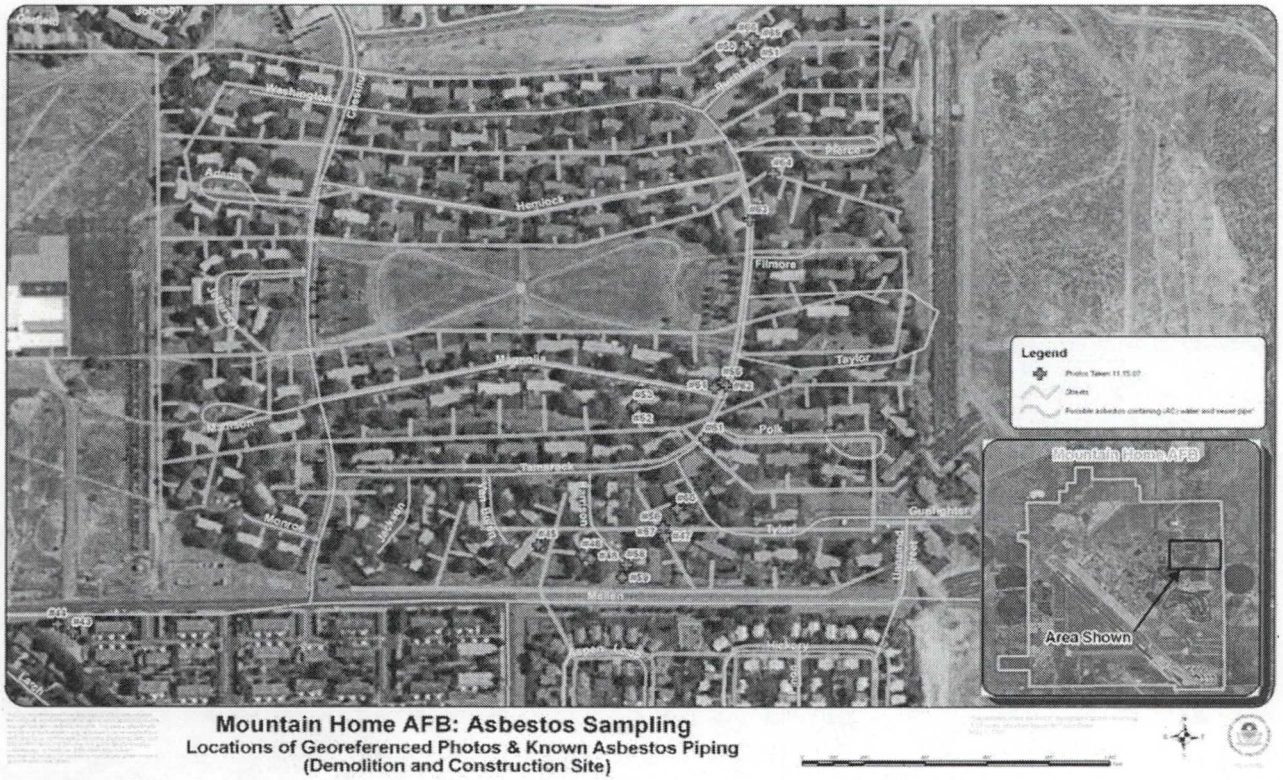

Legend
Mountain Home AFB
Area Shown
Mountain Home AFB: Asbestos Sampling
Locations of Georeferenced Photos & Known Asbestos Piping
(Demolition and Construction Site)

Figure 42

Figure 41 – Fragments of cement asbestos pipe (sample 07464312) collected from the surface of the ground at the Verlinde Hill Debris Field.

Figure 39 – Bulldozer on the surface of the pile at the Verlinde Hill Debris Field. The shovel and rock hammer indicate the location of pieces of cement asbestos pipe.

Figure 40 – Fragment of cement asbestos pipe (not sampled) on the pile at the Verlinde Hill Debris Field.

Figure 37 – Fragment of cement asbestos pipe (Sample 07464311) at the Verlinde Hill Debris Field.

Figure 38 – Fragment of cement asbestos pipe (not sampled) on the pile at the Verlinde Hill Debris Field.

Figure 35 - Fragment of cement asbestos pipe (not sampled) on the surface of the ground at the Verlinde Hill Debris Field.

Figure 36 – Surface of the top of the pile at the Verlinde Hill Debris Field. The Bulldozer on the right hand side of the image was observed operating on the pile in September 2007.

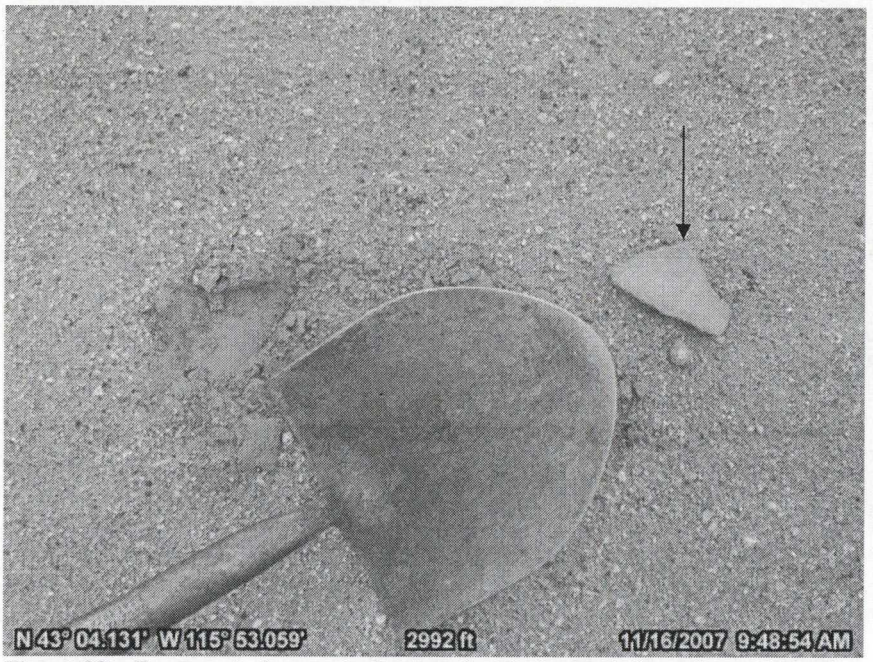


Figure 33 – Fragment of cement asbestos pipe (not sampled) on the surface of the ground at the Verlinde Hill Debris Field.

Figure 34 - Fragment of cement asbestos pipe (not sampled) on the surface of the ground at the Verlinde Hill Debris Field.

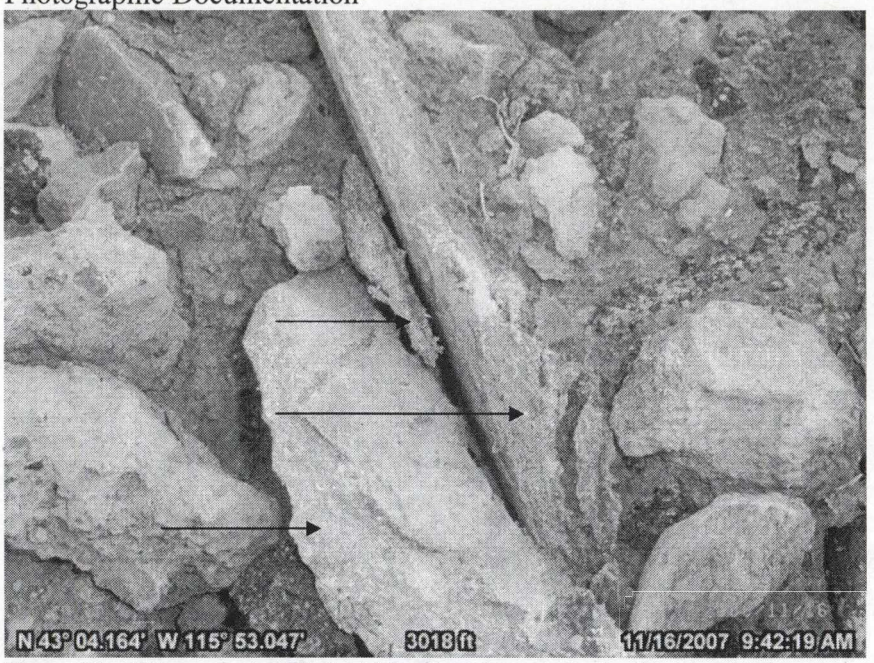


Figure 31 – Pieces of crumbled and fractured cement asbestos pipe (not sampled) at the Verlinde Hill Debris Field.

Figure 32 – Fragment of cement asbestos pipe (not sampled) on the ground at the Verlinde Hill Debris Field.

Figure 29 – Curved fragment of cement asbestos pipe (not sampled) observed on the surface of the Verlinde Hill Debris Field.

Figure 30 – Fragment of cement asbestos pipe (not sampled) on the surface of the pile at the Verlinde Hill Debris Field.

Figure 27 – Cement asbestos pipe fragment (Sample 07464310) found on the side of the pile approximately 3 ft below the surface of the pile at the Verlinde Hill Debris Field.

Figure 28 – Several fragments of cement asbestos pipe (not sampled) observed on the surface of the Verlinde Hill Debris Field.

Figure 25 – Image of IDEQ inspector standing on the ground near the base of the south side of the Verlinde Hill Debris Field to show the approximate depth of the material deposited there.

Figure 26 – End piece of cement asbestos pipe (Sample 07464309) collected at the base of the Verlinde Hill Debris Field.

Figure 23 – Fragment of cement asbestos pipe on the surface of the ground at the Phase 7 construction site.

Figure 24 – Fragment of cement asbestos pipe (Sample 07464308) collected at the Verlinde Hill Debris Field.

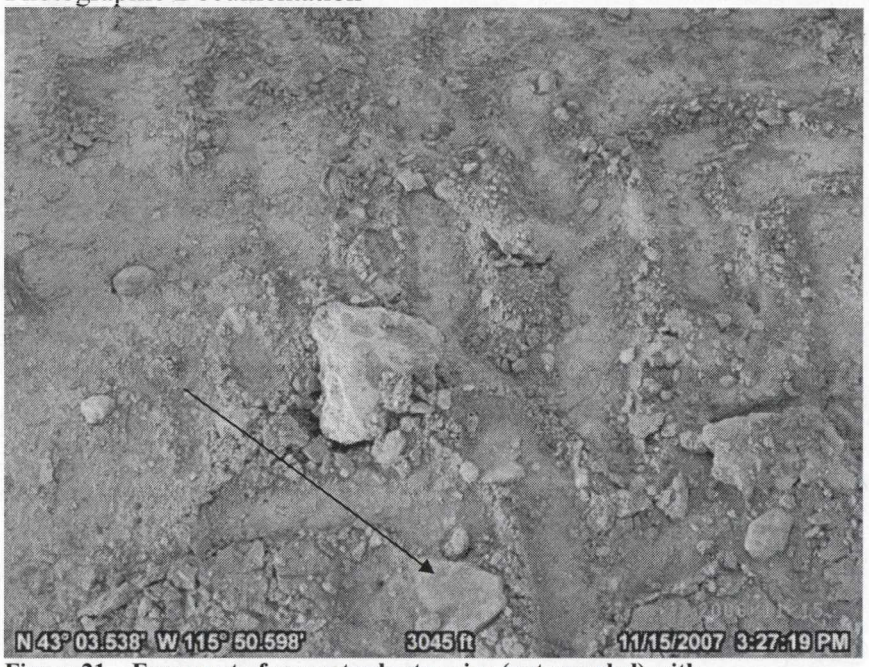


Figure 21 – Fragment of cement asbestos pipe (not sampled) with tractor tire marks in soil.

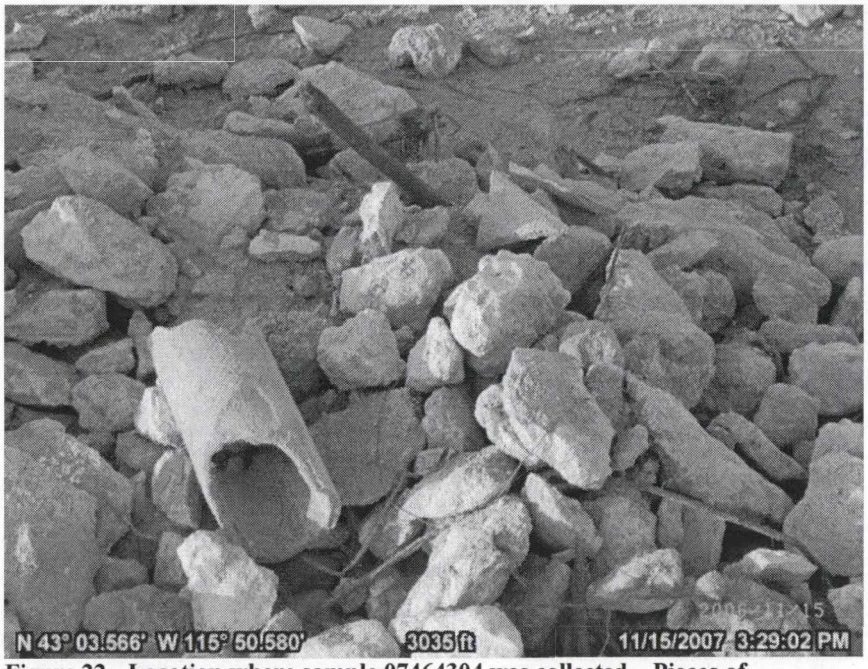


Figure 22 - Location where sample 07464304 was collected. Pieces of pipe marked with orange paint.

Figure 19 – Fragment of cement asbestos pipe (not sampled) on the surface of the ground at Phase 7.

Figure 20 – Fragment of cement asbestos pipe (Sample 07464303) on the sifted rock pile.

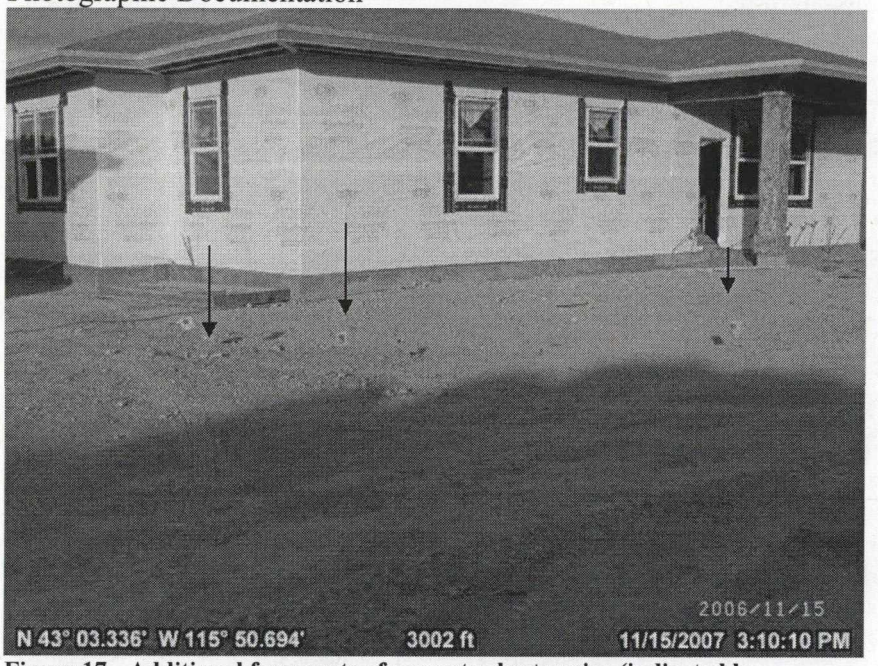


Figure 17 - Additional fragments of cement asbestos pipe (indicated by green flags) on the surface of the ground between Units 14 and 15, phase 6 construction site.

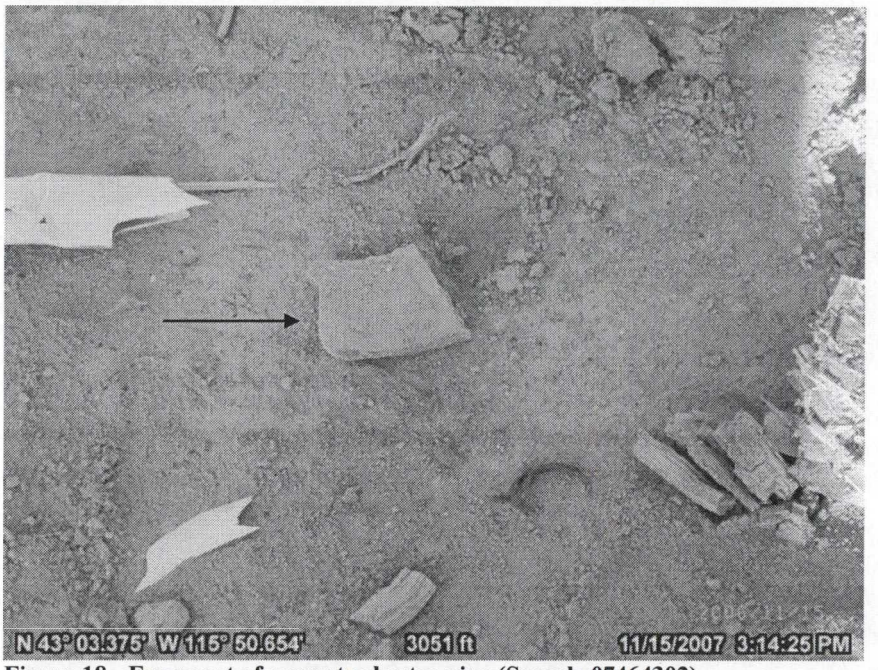


Figure 18 - Fragment of cement asbestos pipe (Sample 07464302) found near the entrance to Phase 7 construction site.

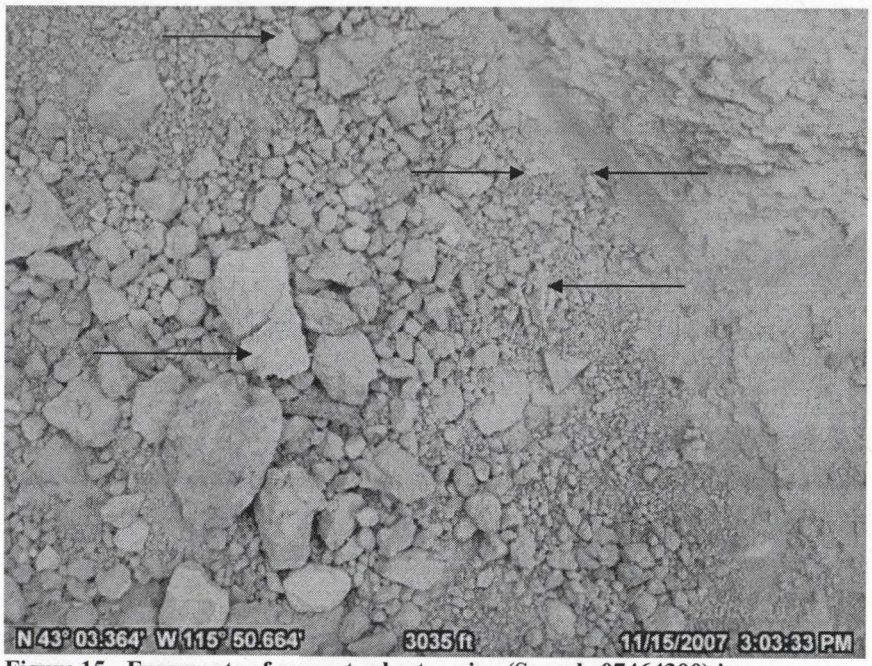


Figure 15 - Fragments of cement asbestos pipe (Sample 07464300) in open pit at the phase 6 construction site.

Figure 16 - Cement asbestos pipe fragment (Sample 07464301) between Units 14 and 15, phase 6 construction site.

Figure 13 – Trenching machine parked at Phase 7 construction site.

Sample Collection

Figure 14 - Cement asbestos pipe (Sample 07464300) in open pit at the phase 6 construction site.

Figure 11 – Cement asbestos pipe fragment on sifted rock pile.

Trenching Equipment

Figure 12 – Trenching machine parked at Phase 7 construction site.

Figure 9 – Sifting Machine.

Figure 10 – Pile of sifted rock.

Figure 7 – Large piece of cement asbestos pipe protruding from the wall of an open trench.

Rock/Soil Sifting Operation

Figure 8 – Rock screen (1 ft width) used to separate larger rocks from soil.

Figure 5 – Fragment of cement asbestos pipe on the surface of the ground at the Phase 6 construction area.

Figure 6 – Several fragments of cement asbestos pipe on the surface of the ground at the Phase 7 construction site.

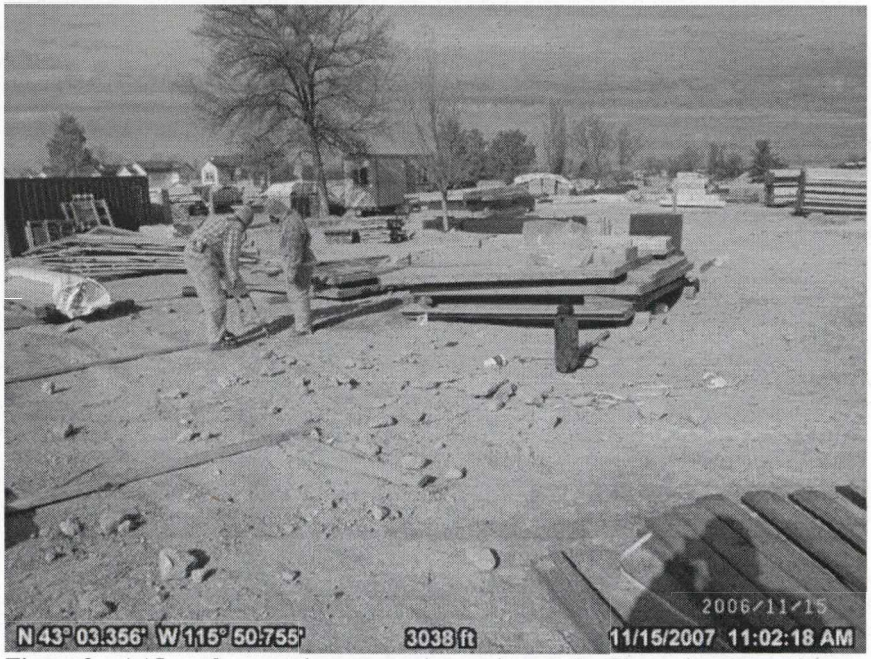


Figure 3 – AAI workers setting up an air monitor at the Phase 6 construction site.

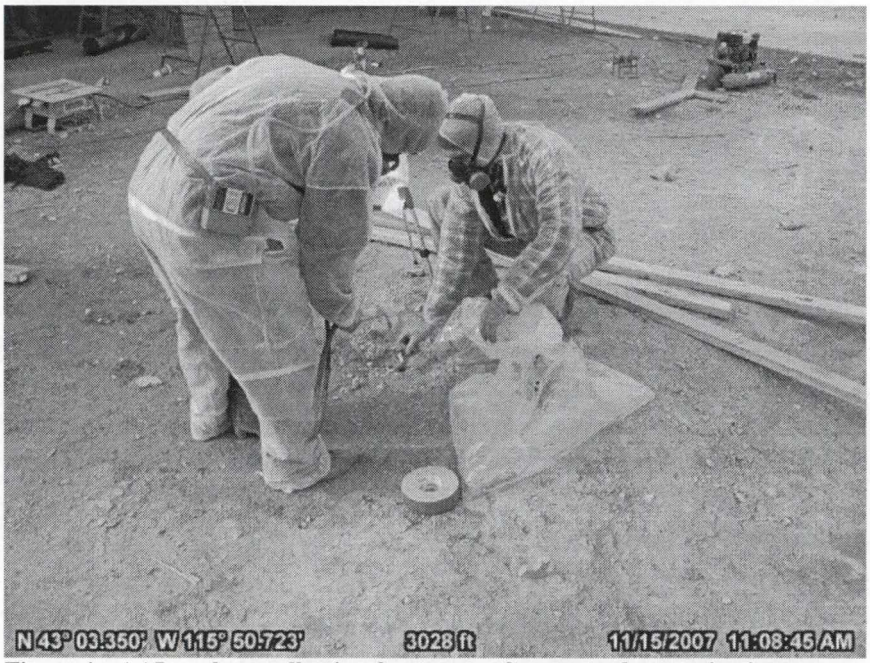


Figure 4 – AAI workers collecting fragments of cement asbestos pipe in the Phase 6 construction area.

Note: Green time stamp=Pacific Time
Orange data stamp should read 2007.

Asbestos Abatement

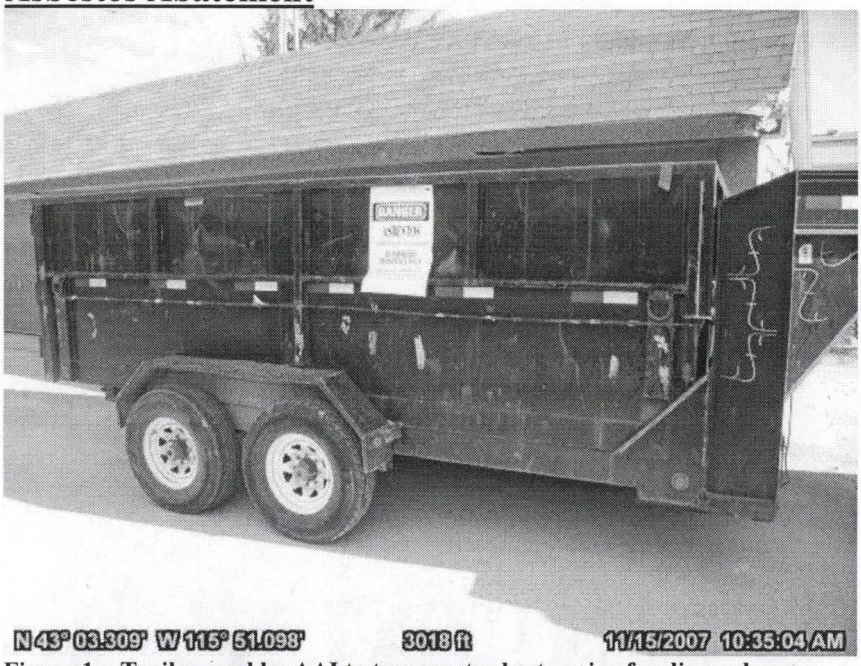


Figure 1 – Trailer used by AAI to transport asbestos pipe for disposal.

Figure 2 – Unit D used to store cement asbestos pipe after workers covered it with a plastic tarp.

APPENDIX 1

5. Rock and construction debris (including concrete, asphalt, and fragments of cement asbestos pipe) were transported by dump truck from the Phase VI and VII constructions sites and deposited at the Verlinde Hill Debris Field.

6. Fragments of cement asbestos pipe were observed on the ground at the Verlinde Hill Debris Field November 2007.

7. Samples of cement asbestos pipe collected at the Verlinde Hill Debris Field were analyzed and found to contain chrysotile and crocidolite asbestos at concentrations greater than 1%.

presence of the minerals clinochrysotile (chrysotile) and riebeckite (crocidolite) were confirmed by XRD analysis of samples 07464300 and 07464310.

The fragments of cement asbestos pipe collected at Mountain Home AFB contain greater than 1% asbestos by weight. The action of cutting, breaking, or crushing the cement asbestos pipe with mechanical trenching equipment caused it in some cases to become friable. The final analytical report includes a narrative that describes the asbestos analysis by stereomicroscope and polarized light microscopy for the samples collected at Mountain Home AFB. The narrative includes two images (Figures 1 and 2, Appendix 4) that display fragments that show numerous asbestos fiber bundles protruding from the broken surfaces of the cement asbestos pipe samples.

Records Review, Licensing, and Certification

The USACE provided EPA and IDEQ with numerous copies of asbestos waste shipment records for transite pipe and other ACM shipped from Mountain Home AFB. The generator section of the forms typically listed the different housing developments as the work sites, such as Presidential Acres or Oasis Housing. The operator's name was Asbestos Abatement, Inc., and the Waste Disposal Site was Idaho Waste Systems, Inc. Simcoe Road Regional Landfill. The forms also described the waste materials and the quantities being transported and disposed of. I reviewed several copies of the waste shipment records and did not identify any discrepancies.

AAI is a licensed asbestos abatement contractor (License #12442-B-3) in the State of Idaho. The AAI workers observed by EPA working at Mountain Home AFB in November 2007 were currently certified, fit-tested, and enrolled in medical monitoring. Copies of the certification and related documents are included in Appendix 5.

Conclusions

1. Old underground cement asbestos (transite) water and sanitary sewer pipe in Phases VI and VII of the Mountain Home AFB military housing redevelopment sustained damage during trenching operations.

2. Cement asbestos pipe was rendered friable as a result of the mechanical forces associated with the cutting of underground pipe with trenching equipment and being driven on with heavy equipment.

3. Fragments of cement asbestos pipe were observed on the ground within the Phase VI and VII construction sites in November 2007.

4. Samples of cement asbestos pipe collected at the Phase VI and VII construction sites were analyzed and found to contain chrysotile and crocidolite asbestos at concentrations greater than 1%.

A consolidated list of the results of analysis for the samples associated with this project is summarized in Table 1. Copies of the reports of analysis and related quality assurance narratives are included in Appendix 4.

Table 1 Results of Analysis

Sample Number	PLM Result			PLM Duplicates	XRD Results[2]	Personal Monitor TEM result
	Mineral	Quant	Qualitative Estimate			
07464300	chrysotile crocidolite	**10-15%** **5-10%**		R-10 QA duplicate analysis chrysotile **8-12%** crocidolite **1-5%**	chrysotile **Minor** crocidolite **Trace**	
07464301	chrysotile crocidolite		>1% asbestos			
07464302	chrysotile crocidolite		>1% asbestos			
07464303	chrysotile crocidolite	**10-15%** **1-5%**		NEIC QA Inter-laboratory Result chrysotile **6.5%** crocidolite **10%**		
07464304	chrysotile crocidolite		>1% asbestos			
07464305	chrysotile crocidolite	**10-15%** **1-5%**				
07464306						ND
07464307						ND
07464308	chrysotile crocidolite		>1% asbestos			
07464309	chrysotile crocidolite		>1% asbestos			
07464310	chrysotile crocidolite	**8-12%** **1-5%**			chrysotile **Trace** crocidolite **Trace**	
07464311	chrysotile crocidolite	**8-12%** **5-10%**				
07464312	chrysotile crocidolite		>1% asbestos			

[1] PNQ – The asbestos was present but not quantified by gravimetric matrix reduction.

[2] XRD results are reported as approximately greater than 20% by weight for major, 5-20% for minor, and less than 5% for trace amounts.

The personal air monitoring samples were analyzed by Lab/Cor, Inc. using Method NIOSH 7402 entitled Asbestos by TEM (transmission electron microscopy). Lab/Cor, Inc. did not detect asbestos fibers in either of the personal air monitoring samples. It is important to note that during the sampling period the surface of the ground was damp from recent precipitation and the physical retrieval, by hand, of cement asbestos pipe fragments off the surface of the ground is a relatively low impact activity.

For quality assurance purposes, a duplicate bulk sample (07464303) was sent for analysis by PLM at the U.S. EPA National Enforcement Investigations Center (NEIC) in Denver, Colorado. The analysis revealed 6.5% chrysotile asbestos and 10% crocidolite asbestos in sample 07464303. In addition, two duplicate bulk specimens (07464300 and 07464310) were analyzed by XRD to verify the mineral identification by PLM. The

Eleven bulk samples of cement asbestos pipe were collected at Mountain Home AFB on November 15-16 2007. Six of the bulk samples were collected at the Phase VI and VII building sites and five of the bulk samples were collected at the Verlinde Hill Debris Field. The sample locations were documented with global positioning system (GPS) data acquired with a Ricoh model Capilo 500SE digital camera. The GPS data has been plotted on aerial images/maps which are included at the end of Appendix 1. Figure 44 shows the location of the samples collected at the Phase VI and Phase VII sites. Figure 45 shows the location of the samples collected at the Verlinde Hill Debris Field.

While collecting samples at the Verlinde Hill Debris Field, members of the field team (Mike Spomer and Jed Januch) wore Tyvek® suits, vinyl gloves, full-face air purifying respirators with P-100 HEPA cartridges, and Gilian® personal air monitoring pumps. The air monitoring pumps were connected with Tygon tubing to 0.8 µm mixed cellulose ester (MCE) filter cassettes. Two air samples were collected for the purpose of monitoring potential asbestos exposure while sampling.

The samples of cement asbestos pipe were collected as grab samples. The samples were placed inside new 6 mil re-sealable plastic bags. The personal air monitoring samples were collected over 83 minutes duration at a flow rate of 1,683 cubic centimeters (cc) per minute for sample 07464306 and 2,528 cc/minute for sample 07464307. The personal sampling pumps were calibrated using a Gilian® electronic soap-film meter with a personal monitoring flow cell, serial number 002598-S. The bulk samples and personal air monitoring samples were packaged in a plastic cooler which was sealed closed with duct tape and EPA Region 10 custody seals.

Both the bulk cement asbestos pipe samples and the personal air monitoring samples were shipped under chain of custody via commercial delivery service (Federal Express – Air bill Number 8627 8187 7120) to the EPA Region 10 Laboratory in Port Orchard, Washington. The personal air monitoring samples were hand-delivered by EPA (Jed Januch) from the EPA Region 10 Laboratory to Lab/Cor, Inc., located in Seattle, Washington.

Chrysotile asbestos and crocidolite asbestos (asbestiform riebeckite) was detected in all of the bulk samples of cement asbestos pipe collected on November 15-16, 2007, at Mountain Home AFB. The analytical method used was EPA 600/R-93/116, titled: Test Method for the Determination of Asbestos in Bulk Building Materials. The method employs analysis by polarized light microscopy (PLM) and x-ray diffraction (XRD).

Five of the samples (07464300, 07464303, 07464305, 07464310, and 07464311) were analyzed by PLM after gravimetric matrix reduction resulting in a quantitative result between 8% and 15 % chrysotile asbestos and 1% and 10 % crocidolite asbestos. Six of the samples (07464301, 07464302, 07464304, 07464308, 07464309, and 07464312) were analyzed by PLM without gravimetric matrix reduction resulting in a qualitative estimate of greater than 1% total asbestos.

painted with orange colored paint. While inspecting the Phase VII site the inspection team observed fragments of cement asbestos pipe on the ground in the area that had been cleaned earlier in the day by the AAI abatement workers. The inspection team also observed a large piece of pipe sticking out of the wall of the trench about 2 ft. below the ground surface where a foundation for a new housing unit had been excavated.

During the inspection of Phase VII, a USACE representative (James La Fleur) showed the inspection team the rock screen and sifting equipment and explained how it worked. The rock screen was a large metal structure with grates that were approximately 1 ft. apart. Loads of material (mixed rock, building material, and dirt) are picked up with a bucket loader and put through this first screen that separates material larger than 1 ft. in diameter. The material that passes the 1 ft. grate is picked up with the bucket loader and put into the sifter which mechanically agitates and screens debris such as rocks from the soil. There was a large pile of rocks and a couple of large piles of sifted soil near the sifting equipment. According to the USACE representative, the material in the rock pile was the same type of material transported and dumped at the Verlinde Hill Debris Field. The sifted soil would be retained on the construction site to be used as fill. There were several fragments of cement asbestos pipe in the pile of rock near the sifting equipment.

Figure 42 shows a few of the locations where the inspection team observed cement asbestos pipe at the Phase VI and Phase VII construction and demolition sites.

November 16, 2007 – Verlinde Hill Debris Field

During the inspection of the Verlinde Hill Debris Field, the weather conditions were partly cloudy, with variable wind, and light rain before the inspection and during the last half of the inspection at this site. The inspection team consisted on Jed Januch representing EPA and Nichole Deinarowicz and Mike Spomer representing IDEQ. While at the Verlinde Hill Debris Field, the inspection team took digital photographs while collecting samples.

The inspection team observed the contents of the rubble pile at Verlinde Hill is made up mostly of rock and construction debris including chunks of broken concrete, asphalt, and pieces of cement asbestos pipe. Numerous fragments of cement asbestos pipe are on the surface of the debris field and scatted on the top, middle, and bottom of the pile on the north, east, and south sides. Figure 43 shows a few of the locations where the inspection team observed cement asbestos pipe at the Verlinde Hill Debris Field.

Asbestos Sampling and Laboratory Analysis

The sampling and analysis was done according to a QAPP approved by Mr. Don Matheny, U.S. EPA Region 10 Quality Assurance Chemist, on November 14, 2007. A copy of the QAPP and the associated approval memo are included in Appendix 3.

During the inspection of the military housing demolition and construction sites, the weather conditions were partly cloudy, variable wind, with no precipitation. The inspection team observed two workers (Kevin Moser and Joe Spurgeon) from an asbestos abatement contractor called Asbestos Abatement, Inc., (AAI) on the site retrieving fragments of cement asbestos pipe off the ground.

The workers were wetting the fragments with a garden sprayer and placing them in a plastic bag. During the cement asbestos pipe retrieval, the workers were wearing coveralls, half-face air purifying respirators, and personal monitoring pumps. The workers placed the filled plastic bags of wet cement asbestos pipe into a plastic lined bed of a tandem trailer (Idaho plate #LE 7660). The trailer was placarded with a warning signs on the metal side boards.

The inspection team observed one of the two satellite locations where asbestos pipe was being stored for disposal. This was located in a storage unit (D) on the Phase VI site near the portable trailers used for Parsons Construction offices. It was noted that the front surface of the door was placarded with an 8½ x 11 inch asbestos warning sign. The inspection team requested that the workers open the door and allow them to observe the material stored in the room. Inside storage unit D, the inspection team observed a stack of dry cement asbestos pipe sections laying on a plastic tarp on the surface of the floor. The workers quickly put their respirators on, entered the storage unit, and pulled the plastic tarp over the top of the sections of pipe. A short time after the workers came out of the storage unit they entered the Parsons Construction offices. They did this while dressed in the same coveralls they wore inside the storage unit without performing decontamination.

While observing the AAI workers, the inspection team had the opportunity to visit with Dale Lundy of Industrial Hygiene Resources, Inc. (IHR). He was responsible for managing the personal air monitors on the workers and deploying stationary air monitors in the areas where the AAI workers were picking up the cement asbestos pipe fragments. According to Dale Lundy, up to that point, no asbestos fibers had been detected in the personal and stationary air monitoring samples collected at Mountain Home AFB. He said that the method of analysis used for all the samples was NIOSH 7400 – asbestos by phase contrast microscopy (PCM).

While inspecting the Phase VI site, the inspection team observed numerous fragments of cement asbestos pipe on the surface of the ground. The broken pipe fragments were marked with green colored flags. The cement asbestos pipe fragments appeared gray in color with white and blue colored fiber bundles protruding from the broken edges.

The inspection team also visited Phase VII where the AAI workers had already picked up the fragments off the surface of the ground. The locations of the cement asbestos pipe fragments at Phase VII were marked with orange colored flags or were

water distribution and sanitary sewer lines.[5] Notes in the USACE Demolition Plan 1, Plate No. C-102, and Demolition Plan 2, Plate No.C-103, state "An older asbestos concrete water distribution system not shown on drawings within the Phase VII area has been abandoned in place." [6]

November 2007- EPA Site Visit

On November 15-16, 2007, a team of investigators from the EPA and the Idaho Department of Environmental Quality (IDEQ) conducted an inspection at Mountain Home AFB to determine the extent of the asbestos release discovered in September 2007. EPA was represented by Jed Januch and the IDEQ was represented by Eileen Loerch, Nichole Deinarowicz, and Michael Spomer. Accompanying the team was Special Agent David Berrett of the Department of Defense Office of the Inspector General, and Special Agents Matt Peltier and Allison Angel of the Air Force Office of Special Investigations. The team documented observations during the site visit with digital photographs. The digital photographs taken by EPA are displayed in Figures 1-41 in Appendix 1 of this report. An additional 32 digital photographs taken by IDEQ and are included in Appendix 2.

November 15, 2007 - Phases VI & VII

Before the site visit began, the EPA and IDEQ officials conducted an opening conference with officials from the Mountain Home AFB including:

Lt Col Tim Wood	Mt. Home AFB/CES	(208) 828-6353
Nathan Rowland	Mt. Home AFB/CES	(208) 828-6353
Paula Jo Brown	Mt. Home AFB/CES/Env. Flight	(208) 828-6666
Curtis Olsen	Mt. Home AFB/CES/Env. Flight	(208) 828-1684
Bryan Trimberger	Mt. Home AFB/CES/Env. Flight	(208) 828-3724
Pam Dugger	Mt. Home AFB	(208) 828-2288
Megan Keller	Mt. Home AFB/CES/Env. Flight	(208) 828-1784
Mark Slowminski	USACE	(208) 832-4342 ext. 2015

The inspection team showed identification and explained the reason for the inspection was to follow up to the discovery of the asbestos release discovered at Mountain Home AFB in September 2007. It was also during this time that the inspection team requested several documents and maps. Copies of these materials were supplied to IDEQ and EPA either during the inspection or sent at a later date.

---

[5]Department of the Air Force, Tactical Air Command, Master Plan, Topographical and Utility Maps. Mountain Home Air Force Base, Mountain Home, Idaho. May 1, 1967.

[6] U.S. Army Corps of Engineers Seattle District, Mountain Home Family Housing Phase VII Demolition Plan 1&2, Plate Numbers C-102 and C-103, Mountain Home AFB PN QYZH88-7176, Idaho. 03May06.

Cement Asbestos Pipe – Transite

Cement asbestos pipe is composed of Portland cement, aggregate material, and asbestos (typically between 15-25%). Cement asbestos pipe is classified under the asbestos NESHAP as category II non-friable ACM. It can become RACM when it becomes friable or has a high probability of becoming or has become crumbled, pulverized, or reduced to a powder by the forces expected to act on the material during the course of demolition or renovation. Cutting, breaking, or crushing cement asbestos pipe with mechanical trenching equipment will cause it to become RACM. Further, the burial in place of cement asbestos pipe that had been crushed during the course of demolition or renovation activities would cause the locations to be considered active waste disposal sites subject to federal regulation.[2] Over time, the weathering of cement asbestos pipe will increase the potential release of asbestos fibers from the cement matrix.

Sources of Cement Asbestos Pipe at Mountain Home AFB

A Hazardous Building Materials Survey for the Phase VII housing conducted in 2004 by Hart Crowser, Inc. identified asbestos containing building material (ACBM) in the housing units at Mountain Home AFB.[3] The types of ACBM identified included insulation, caulk, cement asbestos board (CAB), mastics, ceiling and roofing materials. It also identified heater duct under the concrete slab foundation of the buildings as ACBM. The material was assumed to be asbestos containing based on review of as-built figures at Mountain Home AFB. The material was not sampled for analysis in order to preserve the building heating system integrity. Hart Crowser, Inc. estimated approximately 500 linear feet of 8-inch cement asbestos heater duct per housing unit.

A limited asbestos inspection, conducted in 2005 by AC&G Environmental Services Inc., identified a variety of ACBM in the Phase VI housing including the transite heater duct.[4] Analysis of the heater duct revealed that it contained 8% crocidolite and 7% chrysotile asbestos. The report estimated 71,000 linear feet of cement asbestos heater duct in the Phase VI housing.

Another source of transite pipe not addressed in either the Phase VII survey or the Phase VI inspection was transite water and sewer pipe located below the ground surface. Air Force topographical and utility maps produced in1967 show a network of cement asbestos pipes in various diameters (such as 4-inch, 6-inch, 8-inch, and 10-inch) used for

---

[2] Rasnic, John B. Director of Stationary Source Compliance Division, U.S. EPA Office of Air Quality Planning and Standards. Letter to Mr. Joseph L. Perez regarding Asbestos Cement Pipe Disposal. July 17, 1991.

[3] U.S. Army Corp of Engineers, Hazardous Building Material Survey Report – Phase VI Housing – Oasis/Presidential Acres Mountain Home AFB Contract Number DACA67-02-D-2002, August 26, 2004.

[4] AC&G Environmental Services, Inc. Limited Asbestos Inspection, Phase VI, 142 Residential Dwelling Unit Demolition, Mountain Home Air Force Base, Mountain Home, Idaho, DACA67-02-D-2012, May 9, 2005.

U.S. EPA Region 10 Field Technical Support
Mountain Home Air Force Base – Asbestos
Final Report – April 1, 2008

Introduction

The United States Environmental Protection Agency (EPA) Region 10 Office of Compliance and Enforcement (OCE) requested technical assistance from the EPA Office of Environmental Assessment (OEA), to conduct an investigation of asbestos releases at building demolition/construction sites and at the Verlinde Hills Debris Field at Mountain Home Air Force Base (AFB) in Mountain Home, Idaho. The investigation was conducted between November 15, 2007 and March 14, 2008 and involved site visits, sampling and analysis, and document review. The primary purpose for the investigation was to determine if Mountain Home AFB is in compliance with the Clean Air Act (CAA) and other relevant federal environmental statutes and regulations.

Background

The Department of Defense (DOD) started replacement of military housing at Mountain Home AFB in 2004. The Seattle District of the U.S. Army Corp of Engineers (USACE) manages the 5-year multi-phased program (Phases I-VIII) which involves demolition of old housing and construction of over 1,100 new family housing units.

On September 18, 2007, an OEA field team (Andy Hess and Jed Januch) visited Mountain Home AFB to do environmental sampling at the request of investigators from the DOD Inspector General's office. The team observed several fragments of cement pipe scattered on the ground at the Phase VII building demolition and construction site and at the Verlinde Hill Debris Field. Samples of the cement pipe were collected at both sites. Analysis of the samples revealed that the cement pipe contained both chrysotile and crocidolite asbestos at a concentration greater than 1%.[1]

Asbestos

Asbestos is a commercial term used to describe a group of silicate minerals belonging to the serpentine or amphibole groups which have crystallized in the asbestiform habit. Asbestos is defined in 40 CFR Part 61 as meaning the asbestiform varieties of chrysotile (serpentine); crocidolite (asbestiform riebeckite), amosite (asbestiform cummingtonite-grunerite); and tremolite; anthophyllite, and actinolite. Category II non-friable asbestos-containing material (ACM) is any material, such as asbestos-cement pipe, that contains greater than 1% asbestos. Regulated asbestos containing material (RACM) includes Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

[1] U.S. EPA Region 10, Field Technical Support Document, Mountain Home Air Force Base (unpublished report). September 2007.

FILE

U.S. EPA Region 10 Field Technical Support Mountain Home Air Force Base – Asbestos Final Report – April 1, 2008

Prepared by:

Jed Januch, Senior Investigator
Office of Environmental Assessment
7411 Beach Drive East
Port Orchard, Washington 98366